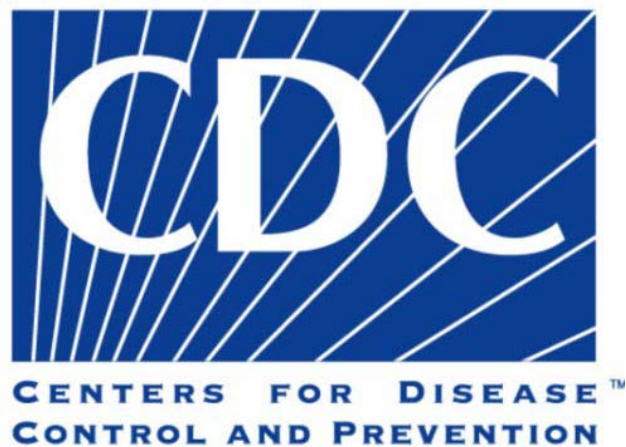


User Guide to the 2016 Period Linked Birth/Infant Death Public Use File



DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics
Division of Vital Statistics

2016 Period Linked Birth/Infant Death Data Set

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Introduction

The linked birth/infant death data set (linked file) is released in two formats - period data and birth cohort data. This documentation is for the 2016 period linked file.

Period data - The numerator for the 2016 period linked file consists of all infant deaths occurring in 2016 linked to their corresponding birth certificates, whether the birth occurred in 2015 or 2016. The denominator file for this data set is the 2016 natality file, that is, all births occurring in 2016.

The 2016 period linked birth/infant death data set includes two data files. The first file includes all US infant deaths which occurred in the 2016 data year linked to their corresponding birth certificates, whether the birth occurred in 2015 or 2016 - referred to as the numerator file. The second file is the 2016 NCHS natality file for the US, which is used to provide denominators for rate computations. These same two data files are also available for Puerto Rico and Guam.

Incomplete National Reporting - Using Reporting Flags

As a result of the delayed, phased transition to the 2003 U.S. Standard Certificate of Live Birth, the 2016 linked file includes data for reporting areas that use the 2003 revision of the U.S. Standard Certificate of Live Birth (revised) and data for reporting areas that use the 1989 Standard Certificate of Live Birth (unrevised) (see the [2016 Natality User Guide](#)). Although many data items are comparable across certificate revisions and are available for the entire United States, some items have more limited reporting areas. In addition, the 2016 linked file contains information on infants born in both 2015 and 2016. As reporting areas changed between 2015 and 2016, this complicates the file. Also, birth data are collected by place of occurrence but are typically tabulated by mother's place of residence. Reporting flags were developed to help the user more readily identify reporting areas for items with less than national reporting for the entirety of 2015 and 2016. Reporting flags are included in the file to assist in accurately excluding records from areas that do not report items when tabulating data by mother's place of residence.

Reporting areas for the 2016 linked file are different from those for the 2016 birth file, as items had to be reported by a state in both 2015 and 2016 to be able to provide complete data. Thus, data for non-comparable items from states that revised in 2016 are excluded from all tabulations. Positions for reporting flags are noted along with each data item in the file layout. Reporting flags must be invoked to generate accurate numbers by residence for items which are not reported by all states. Where applicable, reporting flags are shown in the column "Reporting Flag Position" in the file layout. Reporting flag codes are 0 (item reported in neither the current or previous year or item reported in the previous but not in the current year or item reported in the current but not in the previous

year) and 1 (item reported in both current and previous year). When using these data, select reporting flag=1 to get valid and complete data for an item (see SAS code examples below).

Translating “blanks” - In the 2016 linked file, for data items which are not common or comparable across certificate revisions, events to residents of a revised state occurring in an unrevised state, and events to residents in an unrevised state occurring in a revised state, are often represented by “blanks.” Blanks should be treated as “unknowns” for tabulations.

The correct use of reporting flags and translation of blanks will result in an accurate tally of births and infant deaths for items with incomplete national reporting.

Example of SAS code using reporting flags (and translating blanks)

An example of SAS code that may be used to incorporate the correct use of reporting flags and the translation of blanks is shown below. This example is for the revised prenatal care item. Prenatal care data based on the revised certificate are not considered comparable with data based on the unrevised certificate.

Sample SAS program

```
01 DATA work;
02     INFILE 'C:VS16LINK.USNUMPUB' LRECL=1743;
03     INPUT
04         restatus 104
05         precare 224-225
06         f_precare 226;
07
08     /*Exclude foreign residents*/
09     IF restatus NE 4;
10     /*Select reporting area*/
11     IF f_precare=1;
12     /*Convert blanks to unknown*/
13     IF precare=. THEN precare=99;
14
15 PROC FREQ;
16     TABLE precare;
17 RUN;
```

In this example, “restatus” is used to exclude births to foreign residents (this is standard practice for all NCHS tabulations). Also in this example, blanks are represented by numeric values SAS code = (.). However, for some items in the file, e.g., obstetric procedures, blanks are represented by character values for which the SAS code is empty single quotes (' ').

Single, Multiple, and Bridged Race

In 1997, the Office of Management and Budget (OMB) issued revised standards requiring Federal collection programs to allow respondents to select *one or more race categories*. In 2015 data, forty-nine states and DC reported multiple race data, representing 99% of all U.S. births. For the 2016 period linked file, multiple race data for both 2015 and 2016 births are available from 49 states and DC, representing 99% of all U.S. births (see [User's Guide for the 2016 Natality File](#)).

In 2016, multiple race data were reported on the death certificates of 49 states and DC. In order to provide uniformity and comparability of the data before all or most of the data are available in the new multiple-race format, it was necessary to “bridge” the responses of those for whom more than one race was reported (multiple race) to one, single race.

Weighting

A weight is added to the linked numerator file to correct in part for biases in percent of records linked by major characteristics. The number of infant deaths in the linked file are weighted to equal the sum of the linked plus unlinked infant deaths by age at death and state. The formula for computing the weights is as follows:

$$\frac{\text{number of linked infant deaths} + \text{number of unlinked infant deaths}}{\text{number of linked infant deaths}}$$

A separate weight is computed for each state of residence of birth and each age at death category (<7 days, 7-27 days, 28 days-1 year). Thus, weights are 1.0 for states which link all of their infant deaths. The denominator file is not weighted. Weights are not computed for the Puerto Rico and Guam file.

Marital

National estimates of births to unmarried women are based on two methods of determining marital status. In 2016, marital status was based on a direct question in 49 states, the District of Columbia, and New York City. New York (excluding New York City) used inferential procedures to compile birth statistics by marital status; a birth is categorized as nonmarital if either of these factors, listed in priority-of-use order, is present: a paternity acknowledgement was received or the father's name is missing.

Birthweight

An imputation for not-stated birthweight is added to the data set to reduce potential bias in the computation of birthweight-specific infant mortality rates. If

birthweight is not stated and the period of gestation is known, birthweight is assigned the value from the previous record with the same period of gestation, race, sex, and plurality. The total number of records with birthweight imputed is 945 for both the numerator and denominator files. The addition of this imputation has reduced the percent of not-stated responses for birthweight from 4.09 to 0.66% in the numerator file, and from 0.11 to 0.09% in the denominator file, thus reducing the potential for underestimation when computing birthweight-specific infant mortality rates.

Period of gestation

Information on period of gestation is available for the entire United States. Beginning with the 2014 data year, NCHS transitioned to a new standard for estimating the gestational age of the newborn. The new measure – the obstetric estimate of gestation at delivery (OE) replaces the measure based on the data of the last normal menses (LMP). Accordingly, gestational age data in standard tables are based on the OE. However, LMP-based data are also available in data files.

Comparisons of infant mortality data from the linked file with infant mortality data from the vital statistics mortality file

Although the time periods are the same, numbers of infant deaths and infant mortality rates by characteristics are not always identical between the period linked file and the vital statistics mortality file. Differences in numbers of infant deaths between the two data sources are primarily due to geographic coverage differences. For the vital statistics mortality file, all deaths occurring in the 50 states and the District of Columbia are included regardless of the place of birth of the infant. In contrast, to be included in the linked file, both the birth and death must occur in the 50 states and the District of Columbia. Also, although every effort has been made to design weights that will accurately reflect the distribution of deaths by characteristics, weighting may contribute to small differences in numbers and rates by specific variables between these two data sets. In most cases, differences between numbers of infant deaths and infant mortality rates between the linked file and those computed from the vital statistics mortality file are negligible.

Computation of rates

Infant mortality rates are the most commonly used index for measuring the risk of dying during the first year of life. For the linked birth/infant death dataset they are calculated by dividing the number of infant deaths in a calendar year by the number of live births registered for the same period and are presented as rates per 1,000 or per 100,000 live births. Both the mortality file and the linked birth/infant death file use this computation method but due to unique numbers of infant deaths, as explained in the section above on the comparison of these two

files, the rates will often differ for specific variables (particularly for race and ethnicity). Infant mortality rates in the linked file use the number of live births in the denominator to approximate the population at risk of dying before the first birthday. In contrast to the infant mortality rates based on live births, infant death rates, used only in age-specific death rates with the mortality file, use the estimated population of persons under 1 year of age as the denominator.

For all variables, not stated responses were shown in tables of frequencies, but were subtracted before rates were computed. Rates per 1,000 live births display two digits after the decimal place to provide a more precise and sensitive measurement. For rates per 100,000 live births (by cause of death) the infant mortality rate is shown for one decimal place. Adding an additional decimal for rates per 100,000 does not increase precision as it does for rates per 1,000.

As stated previously, infant death records for the 50 States and the District of Columbia in the US linked file are weighted so that the infant mortality rates are not underestimated for those areas that did not successfully link all records.

Random variation in infant mortality rates

The number of infant deaths and live births reported for an area represent complete counts of such events. As such, they are not subject to sampling error, although they are subject to nonsampling error in the registration process. However, when the figures are used for analytic purposes, such as the comparison of rates over time, for different areas, or among different subgroups, the number of events that actually occurred may be considered as one of a large series of possible results that could have arisen under the same circumstances (61). As a result, numbers of births, deaths, and infant mortality rates are subject to random variation. The probable range of values may be estimated from the actual figures according to certain statistical assumptions.

In general, distributions of vital events may be assumed to follow the normal distribution. When the number of events is large, the relative standard error is usually small. When the number of events is small (i.e., less than 100) and the probability of such an event is small, considerable caution must be observed in interpreting the data. Such infrequent events may be assumed to follow a Poisson probability distribution (3,4). Estimates of relative standard errors (RSE's) and 95-percent confidence intervals are shown below.

The formula for the RSE of infant deaths and live births is:

$$\text{RSE}(D)=100*\sqrt{\frac{1}{D}} \quad \text{where } D \text{ is the number of deaths and}$$

$$\text{RSE}(B)=100*\sqrt{\frac{1}{B}} \quad \text{where } B \text{ is the number of births.}$$

For example, let us say that for group A the number of infant deaths was 497 while the number of live births was 81,555 yielding an infant mortality rate of 6.09 infant deaths per 1,000 live births.

The RSE of the deaths = $100 * \sqrt{\frac{1}{497}} = 4.49$, while the RSE of the births = $100 * \sqrt{\frac{1}{81,555}} = 0.35$.

The formula for the RSE of the IMR is:

$$RSE(IMR) = 100 * \sqrt{\frac{1}{D} + \frac{1}{B}}$$

The RSE of the IMR for the example above

$$= 100 * \sqrt{\frac{1}{497} + \frac{1}{81,555}} = 4.50.$$

Normal distribution—When the number of events is greater than 100, the normal distribution is used to estimate the 95-percent confidence intervals as follows:

$$\text{Lower: } R_1 - 1.96 * R_1 * \frac{RSE(R_1)}{100}$$

$$\text{Upper: } R_1 + 1.96 * R_1 * \frac{RSE(R_1)}{100}$$

Thus, for Group A:

$$\text{Lower: } 6.09 - (1.96 * 6.09 * \frac{4.50}{100}) = 5.55$$

$$\text{Upper: } 6.09 + (1.96 * 6.09 * \frac{4.50}{100}) = 6.63$$

Thus the chances are 95 out of 100 that the true IMR for Group A lies somewhere in the 5.55–6.63 interval.

Poisson distribution—When the number of events in the numerator is less than 100 the confidence interval for the rate can be estimated based on the Poisson distribution using the values in Table II.

$$\text{Lower: } IMR * L(.95, D_{adj})$$

$$\text{Upper: } IMR * U(.95, D_{adj})$$

where D_{adj} is the adjusted number of infant deaths (rounded to the nearest integer) used to take into account the RSE of the number of infant deaths and live births, and is computed as follows:

$$D_{adj} = \frac{D * B}{D + B}$$

$L(.95, D_{adj})$ and $U(.95, D_{adj})$ refer to the values in Table II corresponding to the value of D_{adj} .

For example, let us say that for Group B the number of infant deaths was 53, the number of live births was 9,241, and the infant mortality rate was 5.74.

$$D_{\text{adj}} = \frac{53 * 9,241}{53 + 9,241} = 53$$

Therefore the 95-percent confidence interval (using the formula in Table II for 1–99 infant deaths) =

$$\text{Lower: } 5.74 * 0.74907 = 4.30$$

$$\text{Upper: } 5.74 * 1.30802 = 7.51$$

Comparison of two infant mortality rates—If either of the two rates to be compared is based on less than 100 deaths, compute the confidence intervals for both rates and check to see if they overlap. If so, the difference is not statistically significant at the 95-percent level. If they do not overlap, the difference is statistically significant. If both of the two rates (R_1 and R_2) to be compared are based on 100 or more deaths, the following z-test may be used to define a significance test statistic:

$$z = \frac{R_1 - R_2}{\sqrt{R_1^2 \left(\frac{RSE(R_1)}{100} \right)^2 + R_2^2 \left(\frac{RSE(R_2)}{100} \right)^2}}$$

If $|z| \geq 1.96$, then the difference is statistically significant at the 0.05 level and if $|z| < 1.96$, the difference is not significant.

Methodology

The methodology used to create the national file of linked birth and infant death records uses two data sources:

1. State linked files for the identification of linked birth and infant death certificates; and
2. NCHS natality and mortality computerized statistical files, the source of computer records for the two linked certificates.

States routinely link infant death certificates to their corresponding birth certificates for legal and statistical purposes. When the birth and death of an infant occur in different states, copies of the records are exchanged by the state of death and state of birth in order to effect a link. In addition, if a third state is identified as the state of residence at the time of birth or death that state is also sent a copy of the appropriate certificate by the state where the birth or death occurred.

The NCHS natality and mortality files, produced annually, include statistical data from birth and death certificates that are provided to NCHS by states under the Vital Statistics Cooperative Program (VSCP). The data have been coded according to uniform coding specifications, have passed quality control

standards, have been edited and reviewed, and are the basis for official U.S. birth and death statistics.

To initiate processing, NCHS obtained matching birth certificate numbers from states for all infant deaths that occurred in their jurisdiction. We use this information to extract final, edited mortality and natality data from the NCHS natality and mortality statistical files. Individual birth and death records were selected from their respective files and linked into a single statistical record, thereby establishing a national linked record file.

Percent of Records Linked

The 2016 linked file for the 50 States and D.C. includes 23,079 linked infant death records and 113 unlinked infant death records (99.5% linked and 0.5% unlinked of all infant deaths). The linked file is weighted to the sum of linked plus unlinked records, thus the total number of weighted infant deaths by place of occurrence is 23,192.

While many states link all of their infant deaths, linkage rates for some states are below the national average. When a high percentage of deaths remain unlinked, unweighted infant mortality rates computed for these states are underestimated. It is for this reason that weights are added to the file to correct for biases in the data due to poor data linkage for particular states.

Confidentiality

To minimize the risk of disclosure of individual or institutional information NCHS public-use data files do not contain the actual day of the birth or the dates of birth of the mother or father. Also, for public-use files from 2005 forward, no U.S. geographic detail is identified.

Documents

The documents listed below describe in detail the procedures employed for demographic classification on both the birth and death records and medical classification on death records. These documents, while not absolutely essential to the proper interpretation of the data for a number of general applications, should nevertheless be studied carefully prior to any detailed analysis of demographic or medical data variables. In particular, there are a number of details about multiple cause-of-death coding which, if not understood and analyzed properly, may result in faulty analysis of the data. Volumes 1, 2 and 3 of the ICD-10 may be purchased from the World Health Organization (WHO) Publication Center USA, see <http://www.cdc.gov/nchs/icd/icd10.htm> . Many of the instruction manuals listed below are available electronically on the NCHS website.

- A. National Center for Health Statistics. Vital statistics, Instructions for Classifying the Underlying Cause-of-Death, ICD-10, 2017. NCHS Instruction Manual, Part 2a. Hyattsville, Maryland: Public Health Service.
- B. National Center for Health Statistics. Vital statistics, Instructions for Classifying Multiple Cause-of-Death, ICD-10, 2017. NCHS Instruction Manual, Part 2b. Hyattsville, Maryland: Public Health Service.
- C. National Center for Health Statistics. Vital statistics, ICD-10 ACME Decision Tables for Classifying Underlying Causes-of-Death, 2016. NCHS Instruction Manual, Part 2c. Hyattsville, Maryland: Public Health Service.
- D. National Center for Health Statistics. Specifications for U.S. Standard Certificate of Birth – 2003 Revision. NCHS Instruction manual, Part 3A. Hyattsville, Maryland: Public Health Service.
- E. National Center for Health Statistics. Specifications for U.S. Standard Certificate of Death – 2003 Revision. NCHS Instruction manual, Part 4. Hyattsville, Maryland: Public Health Service.
- F. National Center for Health Statistics. Vital statistics, Computer Edits for Natality Data, Effective 1993. NCHS Instruction Manual Part 12. Hyattsville, Maryland: Public Health Service.
- G. National Center for Health Statistics. Vital statistics, Computer Edits for Mortality Data, Effective 2014. NCHS Instruction Manual Part 11. Hyattsville, Maryland: Public Health Service.

Instructions manuals are available at:

http://www.cdc.gov/nchs/nvss/instruction_manuals.htm

Also see: http://www.cdc.gov/nchs/nvss/vital_certificate_revisions.htm for the most recent information about revised certificates.

Cause of Death Classification

The mortality statistics presented in this report were compiled in accordance with the World Health Organization (WHO) regulations, which specify that member nations classify and code causes of death in accordance with the current revision of the International Statistical Classification of Diseases. The ICD provides the basic guidance used in virtually all countries to code and classify causes of death. The ICD not only details disease classification but also provides definitions, tabulation lists, the format of the death certificate, and the rules for coding cause of death. Cause-of-death data presented in this report were coded by procedures outlined in annual issues of the NCHS Instruction Manual.

About every 10-20 years, the International Classification of Diseases is revised to take into account advances in medical knowledge. Effective with deaths occurring in 1999, the United States began using the Tenth Revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) (5); during the period 1979-98, causes were coded and classified according to the Ninth Revision (ICD-9).

Changes in classification of causes of death due to these revisions may result in discontinuities in cause-of-death trends. Measures of this discontinuity are essential to the interpretation of mortality trends, and are discussed in detail in other NCHS publications (see [Mortality Data internet page](#)).

Underlying Cause of Death Data

Mortality statistics by cause of death are compiled from entries on the medical certification portion of the death certificate. Causes of death include “all those diseases, morbid conditions or injuries which either resulted in or contributed to death and the circumstances of the accident or violence which produced these injuries”. The medical certification of death is divided into two sections. In Part I, the physician is asked to provide the causal chain of morbid conditions that led to death, beginning with the condition most proximate to death on line (a) and working backwards to the initiating condition. Part I of the medical certification is designed to facilitate the selection of the underlying cause of death when two or more causes are recorded on the certificate. The underlying cause of death is defined by the WHO in the ICD-10 as “(a) the disease or injury which initiated the chain of morbid events leading directly to death, or (b) the circumstances of the accident or violence that produced the fatal injury” and is generally considered the most useful cause from a public health standpoint. Part II of the cause-of-death section of the death certificate solicits other conditions that the certifier believed contributed to death, but were not in the causal chain. While some details of the death certificate vary by state, all states use the same general format for medical certification outlined in the U.S. Standard Certificate. The U.S. Standard Certificate, in turn, closely follows the format recommended by the WHO.

For a given death, the underlying cause is selected from the condition or conditions recorded by the certifier in the cause-of-death section of the death certificate. NCHS is bound by international agreement to make the selection of the underlying cause through the use of the ICD-10 classification structure, and the selection and modification rules contained in this revision of the ICD. Additional information on the underlying cause of death can be found at <http://www.cdc.gov/nchs/data/dvs/mort99doc.pdf> .

Multiple Cause of Death Data

The limitations of the underlying cause concept and the need for more comprehensive data suggested the need for coding and tabulating all conditions listed on the death certificate. Coding all listed conditions on the death certificate was designed with two objectives in mind. First, to facilitate studies of the relationships among conditions reported on the death certificate, which require presenting each condition and its location on the death certificate in the exact manner given by the certifier. Secondly, the coding needed to be carried out in a manner by which the underlying cause-of-death could be assigned using the WHO coding rules. Thus, the approach in developing multiple cause data was to provide two fields: 1) entity axis and 2) record axis. For entity axis, NCHS suspends the provisions of the ICD that create linkages between conditions for the purpose of coding each individual condition, or entity, with minimum regard to other conditions present on the death certificate.

Record axis is designed for the generation of person-based multiple cause statistics. Person-based analysis requires that each condition be coded within the context of every other condition on the same death certificate and modified or linked to such conditions as provided by ICD-10. By definition, the entity data cannot meet this requirement since the linkage provisions modify the character and placement of the information originally recorded by the certifier. Essentially, the axis of the classification has been converted from an entity basis to a record (or person) basis. The record axis codes are assigned in terms of the set of codes that best describe the overall medical certification portion of the death certificate. Additional information on multiple cause data processing can be found at <http://www.cdc.gov/nchs/data/dvs/mort99doc.pdf>.

Entity Axis Codes

The original conditions coded for selection of the underlying cause-of-death are reformatted and edited prior to creating the public-use data file. The following paragraphs describe the format and application of entity axis data.

1. Format. Each entity-axis code is displayed as an overall seven byte code with subcomponents as follows:

1. Line indicator: The first byte represents the line of the death certificate on which the code appears. Six lines (1-6) are allowable with the fourth and fifth denoting one or two written in "due to"s beyond the three lines provided in Part I of the U.S. standard death certificate. Line "6" represents Part II of the death certificate.

2. Position indicator: The next byte indicates the position of the code on the line, i.e., it is the first (1), second (2), third (3) ... eighth (8) code on the line.
3. Cause category: The next four bytes represent the ICD-10 cause code.
4. The last byte is blank.

A maximum of 20 of these seven byte codes are captured on a record for multiple cause purposes. This may consist of a maximum of 8 codes on any given line with up to 20 codes distributed across three or more lines depending on where the subject conditions are located on the certificate. Codes may be omitted from one or more lines, e.g., line 1 with one or more codes, line 2 with no codes, line 3 with one or more codes.

In writing out these codes, they are ordered as follows: line 1 first code, line 1 second code, etc. ----- line 2 first code, line 2 second code, etc. ----- line 3 ---- line 4 ---- line 5 ----- line 6. Any space remaining in the field is left blank. The specifics of locations are contained in the record layout given later in this document.

2. Edit. The original conditions are edited to remove invalid codes, reverify the coding of certain rare causes of death, and assure age/cause and sex/cause compatibility. Detailed information relating to the edit criteria and the sets of cause codes which are valid to underlying cause coding and multiple cause coding are provided in NCHS Instruction Manual Part 11.

3. Entity Axis Applications. The entity axis multiple cause data file is appropriate for analyses that require that each condition be coded as a stand alone entity without linkage to other conditions and/or require information on the placement of such conditions in the death certificate. Within this framework, the entity data are appropriate to examine relationships among conditions and the validity of traditional assumptions in underlying cause selection. Additionally, the entity data provide in certain categories a more detailed code assignment that could be excluded in creating record axis data. Where such detail is needed for a study, the user should use entity data. Finally, the researcher may not wish to be bound by the assumptions used in the axis translation process.

The main limitation of entity axis data is that it does not necessarily reflect the best code for a condition when considered within the context of the medical certification as a whole. As a result, certain entity codes can be misleading or even contradict other codes in the record. For example, category K80.2 is titled "Calculus of gallbladder without cholecystitis." Within the framework of entity codes this is interpreted to mean that the codable entity itself contained no mention of cholecystitis rather than that cholecystitis was not mentioned anywhere on the record. Tabulation of records with a "K80.2" as a count of persons having Calculus of gallbladder without cholecystitis would therefore be

erroneous. This illustrates the fact that under entity coding the ICD-10 titles cannot be taken literally. The user should study the rules for entity coding as they relate to his/her research prior to use of entity data. The user is further cautioned that the inclusion notes in ICD-10 that relate to modifying and combining categories are seldom applicable to entity coding (except where provided in NCHS Instruction Manual Part 2b).

In tabulating the entity axis data, one may count codes with an individual code representing the number of times the condition(s) appears in the file. In this kind of tabulation of morbid conditions, the counts among categories may be added together to produce counts for groups of codes. Alternatively, subject to the limitations given above, one may count persons having mention of the disease represented by a code or codes. In this instance it is not correct to add counts for individual codes to create person counts for groups of codes. Since more than one code in the researcher's interest may appear together on the certificate, totaling must account for higher order interactions among codes. Up to 20 codes may be assigned on a record; therefore, a 20-way interaction is theoretically possible. All totaling must be based on mention of one or more of the categories under investigation.

Record Axis Codes

The following paragraphs describe the format and application of record-axis data. Part 2f of the Instruction Manual Series (ICD-10 TRANSAX Disease Reference Tables for classifying Multiple Causes-of-Death) describes the TRANSAX process for creating record axis data from entity axis data.

1. Format. Each record (or person) axis code is displayed in five bytes. Location information is not relevant. The Code consists of the following components:

1. Cause category: The first four bytes represent the ICD-10 cause code.
2. The last byte is blank.

Again, a maximum of 20 codes are captured on a record for multiple cause purposes. The codes are written in a 100-byte field in ascending code number (5 bytes) order with any unused bytes left blank.

2. Edit. The record axis codes are edited for rare causes and age/cause and sex/cause compatibility. Likewise, individual code validity is checked. The valid code set for record axis coding is the same as that for entity coding.

3. Record Axis Applications. The record axis multiple cause data are the basis for NCHS core multiple cause tabulations. Location of codes is not relevant to this data, and conditions have been linked into the most meaningful categories for the certification. The most immediate consequence for the user is that the

codes on the record already represent mention of a disease assignable to that particular ICD-10 category. This is in contrast to the entity code which is assigned each time such a disease is reported on different lines of the certification. Secondly, the linkage implies that within the constraints of ICD-10 the most meaningful code has been assigned. The translation process creates for the user a data file that is edited for contradictions, duplicate codes, and imprecisions. In contrast to entity axis data, record axis data are classified in a manner comparable to underlying cause of death classification thereby facilitating joint analysis of these variables. A potential disadvantage of record axis data is that some detail is sacrificed in a number of the linkages.

The user can take the record axis codes as literally representing the information conveyed in ICD-10 category titles. While knowledge of the rules for combining and linking and coding conditions is useful, it is not a prerequisite to meaningful analysis of the data as long as one is willing to accept the assumptions of the axis translation process. The user is cautioned, however, that due to special rules in mortality coding, not all linkage notes in ICD-10 are used. (NCHS Instruction Manual Part 2f).

The user should proceed with caution in using record axis data to count conditions as opposed to people with conditions, since linkages have been invoked and duplicate codes have been eliminated. As with entity data, person-based tabulations that combine individual cause categories must take into account the possible interaction of up to 20 codes on a single certificate.

Additional Information

In using the NCHS multiple cause data files, the user is urged to review the information in this document and its references. The instructional material does change from year to year and ICD revision to ICD revision. The user is cautioned that coding of specific ICD-10 categories should be checked in the appropriate instruction manual. What may appear on the surface to be the correct code by ICD-10 may in fact not be correct as given in the instruction manuals.

If on the surface it is not obvious whether entity axis or record axis data should be employed in a given application, detailed examination of NCHS Instruction Manual Part 2f and its attachments will probably provide the necessary information to make a decision. It allows the user to determine the extent of the trade-offs between the two sets of data in terms of specific categories and the assumption of axis translation. In certain situations, a combination of entity and record axis data may be the more appropriate alternative.

2016 Period Linked Birth/Infant Death Data Set

Numerator Files:

United States

A. Record count: 23,079
B. Record length: 1,743

Territories

A. Record count: 264
B. Record length: 1,743

Denominator Files:

United States

A. Record count: 3,956,112
B. Record length: 1346

Territories

A. Record count: 31,759
B. Record length: 1346

2016 Linked Public Use File Layout

Position	Len	File*	Field	Description	Flag Position	Values	Definition
1-7	1		FILLER01	FILLER		Blank	
8	1		LATEREC	Late Record Flag		0, blank 1	Not late record Late record
9-12	4	P,G	DOB_YY	Birth Year		2015 2016	2015 2016
13-14	2	P,G	DOB_MM	Birth Month		01 02 03 04 05 06 07 08 09 10 11 12	January February March April May June July August September October November December
15-18	4		FILLER02	FILLER		Blank	
19-22	4	P,G	DOB_TT	Time of Birth	126	0000-2359 9999	Time of Birth Not Stated
23	1	P,G	DOB_WK	Birth Day of Week		1 2 3 4 5 6 7	Sunday Monday Tuesday Wednesday Thursday Friday Saturday
24-31	8		FILLER03	FILLER		Blank	
32	1	P,G	BFACIL	Birth Place (Revised) Revised data only. See field 1330 for national data.	33	1 2 3 4 5 6 7 9	Hospital Freestanding Birth Center Home (intended) Home (not intended) Home (unknown if intended) Clinic / Doctor's Office Other Unknown

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
33	1	P,G	F_BFACIL	Reporting Flag for Birth Place			See footnote
34-49	16		FILLER04	FILLER		Blank	
50	1	P,G	BFACIL_R	Facility Recode		1 2 3	In Hospital Not in Hospital Unknown or Not Stated
51-72	22		FILLER05	FILLER		Blank	
73	1	P,G	MAGEIMP	Mother's Age Imputed Due to missing data, age imputed.		Blank 1	Age not imputed Age imputed
74	1	P,G	MAGEREP	Reported Age of Mother Used Flag Due to missing date of birth, reported age used.		Blank 1	Reported age not used Reported age used
75-76	2	P,G	MAGER	Mother's Age Recode 41			12 10 – 12 years, 13 13 years, 14 14 years, 15 15 years, 16 16 years, 17 17 years, 18 18 years, 19 19 years, 20 20 years, 21 21 years, 22 22 years, 23 23 years, 24 24 years, 25 25 years, 26 26 years, 27 27 years, 28 28 years, 29 29 years, 30 30 years, 31 31 years, 32 32 years, 33 33 years, 34 34 years, 35 35 years, 36 36 years, 37 37 years, 38 38 years, 39 39 years, 40 40 years, 41 41 years, 42 42 years, 43 43 years, 44 44 years, 45 45 years, 46 46 years, 47 47 years, 48 48 years, 49 49 years, 50 50 years and over
77-78	2	P,G	MAGER14	Mother's Age Recode 14		01 03 04 05 06 07 08 09 10 11 12 13 14	Under 15 Years 15 years 16 years 17 years 18 years 19 years 20-24 years 25-29 years 30-34 years 35-39 years 40-44 years 45-49 years 50-54 years
79	1	P,G	MAGER9	Mother's Age Recode 9		1 2 3 4 5 6	Under 15 years 15-19 years 20-24 years 25-29 years 30-34 years 35-39 years

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						7	40-44 years
						8	45-49 years
						9	50-54 years
80-83	4		FILLER06	FILLER		Blank	
84	1	P,G	MBSTATE_R	Mother's Nativity		1	Born in the U.S. (50 US States)
						2	Born outside the U.S. (includes possessions)
						3	Unknown or Not Stated
85-103	19		FILLER07	FILLER		Blank	
104	1	P,G	RESTATUS	Residence Status			
				<u>United States</u>		1	RESIDENT: State and county of occurrence and residence are the same.
						2	INTRASTATE NONRESIDENT: State of occurrence and residence are the same but county is different.
						3	INTERSTATE NONRESIDENT: State of occurrence and residence are different but both are one of the 50 US states or District of Columbia.
						4	FOREIGN RESIDENT: The state of residence is not one of the 50 US states or District of Columbia.
				<u>U.S. Territories</u>		1	RESIDENT: State and county of occurrence and residence residence are the same. (Unique to Guam, all US residents are considered residents of Guam and thus are assigned 1.)
						2	INTRATERRITORY NONRESIDENT: Territory of occurrence and residence are the same but county is different.
						2	INTERTERRITORY RESIDENT: Territory of occurrence and residence are different but both are US Territories.
						3	FOREIGN RESIDENT: The residence is not a US Territory.
105-106	2	P,G	MRACE_R31	Mother's Race Recode 31			
				<u>United States and all Outlying Areas of the United States except Puerto Rico</u>		01	White (only) [only one race reported]
						02	Black (only)
						03	AIAN (American Indian or Alaskan Native) (only)
						04	Asian (only)
						05	NHOPI (Native Hawaiian or Other Pacific Islander) (only)
						06	Black and White
						07	Black and AIAN
						08	Black and Asian
						09	Black and NHOPI
						10	AIAN and White
						11	AIAN and Asian
						12	AIAN and NHOPI

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						13	Asian and White
						14	Asian and NHOPI
						15	NHOPI and White
						16	Black, AIAN, and White
						17	Black, AIAN, and Asian
						18	Black, AIAN, and NHOPI
						19	Black, Asian, and White
						20	Black, Asian, and NHOPI
						21	Black, NHOPI, and White
						22	AIAN, Asian, and White
						23	AIAN, NHOPI, and White
						24	AIAN, Asian, and NHOPI
						25	Asian, NHOPI, and White
						26	Black, AIAN, Asian, and White
						27	Black, AIAN, Asian, and NHOPI
						28	Black, AIAN, NHOPI, and White
						29	Black, Asian, NHOPI, and White
						30	AIAN, Asian, NHOPI, and White
						31	Black, AIAN, Asian, NHOPI, and White
107	1	P,G	MRACE_R6	Mother's Race Recode 6			
				<u>United States and all Outlying Areas</u>		1	White (only)
				<u>of the United States except Puerto</u>		2	Black (only)
				<u>Rico</u>		3	AIAN (only)
						4	Asian (only)
						5	NHOPI (only)
						6	More than one race
108-109	2	P,G	MRACE_R15	Mother's Race Recode 15			
				<u>United States and all Outlying Areas</u>		01	White (only)
				<u>of the United States except Puerto</u>		02	Black (only)
				<u>Rico</u>		03	AIAN (only)
						04	Asian Indian (only)
						05	Chinese (only)
						06	Filipino (only)
						07	Japanese (only)
						08	Korean (only)
						09	Vietnamese (only)
						10	Other Asian (only)
						11	Hawaiian (only)
						12	Guamanian (only)
						13	Samoan (only)
						14	Other Pacific Islander (only)
						15	More than one race
110	1	P,G	MBRACE	Bridged Race Mother			

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
				Includes individuals reporting only one race and individuals reporting more than one race bridged to a single race.			
				<u>United States and all Outlying Areas of the United States except Puerto Rico</u>		1	White
						2	Black
						3	American Indian or Alaskan Native
						4	Asian or Pacific Islander
				<u>Puerto Rico</u>		1	White
						2	Black
						0	Other (not classified as White or Black)
111	1	P,G	MRACEIMP	Mother's Race Imputed		Blank	Mother's race not imputed
						1	Unknown race imputed
						2	All other races, formerly coded 09, imputed.
112-114	3		FILLER08	FILLER		Blank	
115	1	P,G	MHISP_R	Mother's Hispanic Origin Recode		0	Non-Hispanic
				116		1	Mexican
						2	Puerto Rican
						3	Cuban
						4	Central and South American
						5	Other and Unknown Hispanic origin
						9	Hispanic origin not stated
116	1	P,G	F_MHISP	Reporting Flag for Mother's Origin			See footnote
117	1	P,G	MRACEHISP	Mother's Race/Hispanic Origin		1	Non-Hispanic White (only)
				Based on single/multiple-race (fields 105-106, 107, and 108-109); for coding to create bridged-race categories (field 110) see "Coding for bridge-race and Hispanic origin categories" in the Detailed Technical Notes.		2	Non-Hispanic Black (only)
						3	Non-Hispanic AIAN (only)
						4	Non-Hispanic Asian (only)
						5	Non-Hispanic NHOPI (only)
						6	Non-Hispanic more than one race
						7	Hispanic
						8	Origin unknown or not stated
118	1		FILLER09	FILLER		Blank	
119	1	P,G	MAR_P	Paternity Acknowledged	123	Y	Yes
						N	No
						U	Unknown
						X	Not Applicable
120	1	P,G	DMAR	Marital Status			
				<u>United States and all Outlying Areas</u>		1	Married

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Position	Len	File*	Field	Description	Flag Position	Values	Definition
				<u>Of the United States except Puerto Rico</u>		2	Unmarried
						9	Unknown or not stated
				<u>Puerto Rico</u>		1	Yes
						2	Unmarried parents living together
						3	Unmarried parents not living together
						9	Unknown or not stated
121	1	P,G	MAR_IMP	Mother's Marital Status Imputed		Blank	Marital Status not imputed
						1	Marital Status imputed
122	1		FILLER10	FILLER		Blank	
123	1	P,G	F_MAR_P	Reporting Flag for Paternity Acknowledged			See footnote
124	1	P,G	MEDUC	Mother's Education	126	1	8 th grade or less
						2	9 th through 12 th grade with no diploma
						3	High school graduate or GED completed
						4	Some college credit, but not a degree.
						5	Associate degree (AA,AS)
						6	Bachelor's degree (BA, AB, BS)
						7	Master's degree (MA, MS, MEng, MEd, MSW, MBA)
						8	Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD)
						9	Unknown
125	1		FILLER10B	FILLER		Blank	
126	1	P,G	F_MEDUC	Reporting Flag for Education of Mother			See footnote
127-141	15		FILLER11	FILLER		Blank	
142	1	P,G	FAGEREP	Father's Reported Age Used		Blank	Father's reported age not used
						1	Father's reported age used
143-146	4		FILLER12	FILLER		Blank	
147-148	2	P,G	FAGECOMB	Father's Combined Age (Revised)		09-98	Father's combined age in years
						99	Unknown or not stated
149-150	2	P,G	FAGE_R11	Father's Age Recode 11		01	Under 15 years
						02	15-19 years
						03	20-24 years
						04	25-29 years
						05	30-34 years
						06	35-39 years

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						07	40-44 years
						08	45-49 years
						09	50-54 years
						10	55-98 years
						11	Not stated
151-152	2	P,G	FRACE_R31	Father's Race Recode 31		01	White (only) [only one race reported]
						02	Black (only)
						03	AIAN (American Indian or Alaskan Native) (only)
						04	Asian (only)
						05	NHOPI (Native Hawaiian or Other Pacific Islander) (only)
						06	Black and White
						07	Black and AIAN
						08	Black and Asian
						09	Black and NHOPI
						10	AIAN and White
						11	AIAN and Asian
						12	AIAN and NHOPI
						13	Asian and White
						14	Asian and NHOPI
						15	NHOPI and White
						16	Black, AIAN, and White
						17	Black, AIAN, and Asian
						18	Black, AIAN, and NHOPI
						19	Black, Asian, and White
						20	Black, Asian, and NHOPI
						21	Black, NHOPI, and White
						22	AIAN, Asian, and White
						23	AIAN, NHOPI, and White
						24	AIAN, Asian, and NHOPI
						25	Asian, NHOPI, and White
						26	Black, AIAN, Asian, and White
						27	Black, AIAN, Asian, and NHOPI
						28	Black, AIAN, NHOPI, and White
						29	Black, Asian, NHOPI, and White
						30	AIAN, Asian, NHOPI, and White
						31	Black, AIAN, Asian, NHOPI, and White
						99	Unknown or Not Stated
153	1	P,G	FRACE_R6	Father's Race Recode 6		1	White (only)
						2	Black (only)
						3	AIAN (only)
						4	Asian (only)
						5	NHOPI (only)
						6	More than one race
						9	Unknown or Not Stated

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
154-155	2	P,G	FRACE_R15	Father's Race Recode 15		01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 99	White (only) Black (only) AIAN (only) Asian Indian (only) Chinese (only) Filipino (only) Japanese (only) Korean (only) Vietnamese (only) Other Asian (only) Hawaiian (only) Guamanian (only) Samoan (only) Other Pacific Islander (only) More than one race Unknown or Not Stated
156	1	P,G	FBRACE	Bridged Race Father Includes individuals reporting only one race and individuals reporting more than one race bridged to a single race.			
				<u>United States and all Outlying Areas of the United States except Puerto Rico</u>		1 2 3 4	White Black American Indian or Alaskan Native Asian or Pacific Islander
				<u>Puerto Rico</u>		1 2 0	White Black Other (not classified as White or Black)
157-159	3		FILLER13	FILLER			Blank
160	1	P,G	FHISP_R	Father's Hispanic Origin Recode		0 1 2 3 4 5 9	Non-Hispanic Mexican Puerto Rican Cuban Central and South American Other and Unknown Hispanic origin Hispanic origin not stated
				161			
161	1	P,G	F_FHISP	Reporting Flag for Father's Origin			See footnote
162	1	P,G	FRACEHISP	Father's Race/Hispanic Origin Based on single/multiple-race (fields 151-152, 153, and 154-155); for coding to create bridged-		1 2 3	Non-Hispanic White (only) Non-Hispanic Black (only) Non-Hispanic AIAN (only)

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
				race categories (field 156) see “Coding for bridge-race and Hispanic origin categories” in the Detailed Technical Notes		4 5 6 7 8 9	Non-Hispanic Asian (only) Non-Hispanic NHOPI (only) Non-Hispanic more than one race Hispanic Origin unknown or not stated Race unknown or not stated (Non-Hispanic)
163	1	P,G	FEDUC	Father’s Education	165	1 2 3 4 5 6 7 8 9	8 th grade or less 9 th through 12 th grade with no diploma High school graduate or GED completed Some college credit, but not a degree. Associate degree (AA,AS) Bachelor’s degree (BA, AB, BS) Master’s degree (MA, MS, MEng, MEd, MSW, MBA) Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) Unknown
164	1		FILLER14	FILLER		Blank	
165	1	P,G	F_FEDUC	Reporting Flag for Education of Father			See footnote
166-170	5		FILLER15	FILLER		Blank	
171-172	2	P,G	PRIORLIVE	Prior Births Now Living		00-30 99	Number of children still living from previous live births. Unknown or not stated
173-174	2	P,G	PRIORDEAD	Prior Births Now Dead		00-30 99	Number of children dead from previous live births. Unknown or not stated
175-176	2	P,G	PRIORTERM	Prior Other Terminations		00-30 99	Number other terminations Unknown or not stated
177-178	2		FILLER16	FILLER		Blank	
179	1	P,G	LBO_R	Live Birth Order Recode		1-7 8 9	Number of live birth order. 8 or more live births Unknown or not stated
180-181	2		FILLER17	FILLER		Blank	
182	1	P,G	TBO_R	Total Birth Order Recode		1-7 8 9	Number of total birth order. 8 or more total births Unknown or not stated
183-197	15		FILLER18	FILLER		Blank	

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
198-200	3	P,G	ILLB_R	Interval of Last Live Birth Recode	126	000-003 004-300 888 999	Plural delivery Months since last live birth Not applicable / 1 st live birth Unknown or not stated
201-202	2	P,G	ILLB_R11	Interval of Last Live Birth Recode 11	126	00 01 02 03 04 05 06 07 08 88 99	Zero to 3 months (plural delivery) 4 to 11 months 12 to 17 months 18 to 23 months 24 to 35 months 36 to 47 months 48 to 59 months 60 to 71 months 72 months and over Not applicable (1 st live birth) Unknown or not stated
203-205	3		FILLER19	FILLER		Blank	
206-208	3	P,G	ILOO_R	Interval of Last Other Outcome Recode	126	000-003 004-300 888 999	Plural delivery Months since last live birth Not applicable / 1 st natality event Unknown or not stated
209-210	2	P,G	ILOO_R11	Interval of Last Other Outcome Recode 11	126	00 01 02 03 04 05 06 07 08 88 99	Zero to 3 months (plural delivery) 4 to 11 months 12 to 17 months 18 to 23 months 24 to 35 months 36 to 47 months 48 to 59 months 60 to 71 months 72 months and over Not applicable (1 st natality event) Unknown or not stated
211-213	3		FILLER20	FILLER		Blank	
214-216	3	P,G	ILP_R	Interval of Last Pregnancy Recode	126	000-003 004-300 888 999	Plural delivery Months since last live birth Not applicable / no previous pregnancy Unknown or not stated
217-218	2	P,G	ILP_R11	Interval of Last Pregnancy Recode 11	126	00 01	Zero to 3 months (plural delivery) 4 to 11 months

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						02	12 to 17 months
						03	18 to 23 months
						04	24 to 35 months
						05	36 to 47 months
						06	48 to 59 months
						07	60 to 71 months
						08	72 months and over
						88	Not applicable (no previous pregnancy)
						99	Unknown or not stated
219-223	5		FILLER21	FILLER		Blank	
224-225	2	P,G	PRECARE	Month Prenatal Care	226	00	No prenatal care
						01-10	Month prenatal care began
						99	Unknown or not stated
226	1	P,G	F_PRECARE	Reporting Flag for Month Prenatal Care Began			See footnote
227	1	P,G	PRECARE_R	Month Prenatal Care Began Recode	226	1	1 st to 3 rd month
						2	4 th to 6 th month
						3	7 th to final month
						4	No prenatal care
						5	Unknown or not stated
228-237	10		FILLER22	FILLER		Blank	
238-239	2	P,G	PNCVIS	Number of Prenatal Visits (Revised)		00-98	Number of prenatal visits
				See field 242-243 for national data		99	Unknown or not stated
240-241	2		FILLER23	FILLER		Blank	
242-243	2	P,G	PNCVIS_R	Number of Prenatal Visits Recode	244	01	No visits
						02	1 to 2 visits
						03	3 to 4 visits
						04	5 to 6 visits
						05	7 to 8 visits
						06	9 to 10 visits
						07	11 to 12 visits
						08	13 to 14 visits
						09	15 to 16 visits
						10	17 to 18 visits
						11	19 or more visits
						12	Unknown or not stated
244	1	P,G	F_PNCVIS	Reporting Flag for Total Prenatal Care Visits			See footnote

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
245-250	6		FILLER24	FILLER		Blank	
251	1	P,G	WIC	WIC	252	Y N U	Yes No Unknown or not stated
252	1	P,G	F_WIC	Reporting Flag for WIC			See footnote
253-254	2	P,G	CIG_0	Cigarettes Before Pregnancy	265	00-97 98 99	Number of cigarettes daily 98 or more cigarettes daily Unknown or not stated
255-256	2	P,G	CIG_1	Cigarettes 1st Trimester	266	00-97 98 99	Number of cigarettes daily 98 or more cigarettes daily Unknown or not stated
257-258	2	P,G	CIG_2	Cigarettes 2nd Trimester	267	00-97 98 99	Number of cigarettes daily 98 or more cigarettes daily Unknown or not stated
259-260	2	P,G	CIG_3	Cigarettes 3rd Trimester	268	00-97 98 99	Number of cigarettes daily 98 or more cigarettes daily Unknown or not stated
261	1	P,G	CIG0_R	Cigarettes Before Pregnancy Recode	265	0 1 2 3 4 5 6	Nonsmoker 1-5 6-10 11-20 21-40 41 or more Unknown or not stated
262	1	P,G	CIG1_R	Cigarettes 1st Trimester Recode	266	0 1 2 3 4 5 6	Nonsmoker 1-5 6-10 11-20 21-40 41 or more Unknown or not stated
263	1	P,G	CIG2_R	Cigarettes 2nd Trimester Recode	267	0 1 2 3 4	Nonsmoker 1-5 6-10 11-20 21-40

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						5	41 or more
						6	Unknown or not stated
264	1	P,G	CIG3_R	Cigarettes 3rd Trimester Recode	268	0	Nonsmoker
						1	1-5
						2	6-10
						3	11-20
						4	21-40
						5	41 or more
						6	Not stated / Not on certificate
265	1	P,G	F_CIGS_0	Reporting Flag for Cigarettes before Pregnancy			See footnote
266	1	P,G	F_CIGS_1	Reporting Flag for Cigarettes 1st Trimester			See footnote
267	1	P,G	F_CIGS_2	Reporting Flag for Cigarettes 2nd Trimester			See footnote
268	1	P,G	F_CIGS_3	Reporting Flag for Cigarettes 3rd Trimester			See footnote
269	1	P,G	CIG_REC	Cigarette Recode (Revised)	270	Y	Yes
						N	No
						U	Unknown or not stated
270	1	P,G	F_CIG_R	Reporting Flag for Cigarette Recode			See footnote
271-279	9	P,G	FILLER25	FILLER			Blank
280-281	2	P,G	MHT_R	Mother's Height in Inches (Recode)	282	30-78	Height in inches
						99	Unknown or not stated
282	1	P,G	F_M_HT	Reporting Flag for Mother's Height			See footnote
283-286	4	P,G	BMI	BMI	282	13.0-69.9	Body Mass Index
						99.9	Unknown or not stated
287	1	P,G	BMI_R	Body Mass Index Recode	282	1	Underweight <18.5
						2	Normal 18.5-24.9
						3	Overweight 25.0-29.9
						4	Obesity I 35.0-39.9
						5	Obesity II 35.0-39.9
						6	Extreme Obesity III ≥ 40.0
						9	Unknown or not stated
288-291	4		FILLER26	FILLER			Blank

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
292-294	3	P,G	PWGT_R	Pre-pregnancy Weight Recode	295	075-375 999	Weight in pounds Unknown or not stated
295	1	P,G	F_PWGT	Reporting Flag for Pre-pregnancy Weight			See footnote
296-298	3		FILLER27	FILLER		Blank	
299-301	3	P,G	DWGT_R	Delivery Weight Recode	303	100-400 999	Weight in pounds Unknown or not stated
302	1		FILLER28	FILLER		Blank	
303	1	P,G	F_DWGT	Reporting Flag for Delivery Weight			See footnote
304-305	2	P,G	WTGAIN	Weight Gain	307	00-97 98 99	Weight gain in pounds 98 pounds and over Unknown or not stated
306	1	P,G	WTGAIN_R	Weight Gain Recode	307	1 2 3 4 5 9	Less than 11 pounds 11 to 20 pounds 21 to 30 pounds 31 to 40 pounds 41 to 98 pounds Unknown or not stated
307	1	P,G	F_WTGAIN	Reporting Flag for Weight Gain			See footnote
308-312	5		FILLER29	FILLER		Blank	

The following checkbox fields 313-432 include data for revised states only. For national data for items that are comparable across revisions see fields 1330-1345.

313-337	25		<u>Risk Factors</u>				
313	1	P,G	RF_PDIAB	Pre-pregnancy Diabetes	319	Y	Yes
314	1	P,G	RF_GDIAB	Gestational Diabetes	320	N	No
315	1	P,G	RF_PHYPE	Pre-pregnancy Hypertension	321	U	Unknown or not stated
316	1	P,G	RF_GHYPE	Gestational Hypertension	322		
317	1	P,G	RF_EHYPE	Hypertension Eclampsia	323		
318	1	P,G	RF_PPTERM	Previous Preterm Birth	324		
319	1	P,G	F_RF_PDIAB	Reporting Flag for Pre-pregnancy Diabetes			See footnote
320	1	P,G	F_RF_GDIAB	Reporting Flag for Gestational Diabetes			
321	1	P,G	F_RF_PHYPE	Reporting Flag for Pre-pregnancy Hypertension			
322	1	P,G	F_RF_GHYPE	Reporting Flag for Gestational Hypertension			
323	1	P,G	F_RF_EHYPE	Reporting Flag for Hypertension Eclampsia			

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition	
324	1	P,G	F_RF_PPTERM	Reporting Flag for Previous Preterm Birth				
325	1	P,G	RF_INFT	Infertility Treatment Use reporting flag in field 319 for 2016	328	Y N U	Yes No Unknown or not stated	
326	1	P,G	RF_DRUG	Fertility Enhancing Drugs	329	Y N X U	Yes No Not applicable Unknown or not stated	
327	1	P,G	RF_ART	Asst. Reproductive Technology	330	Y N X U	Yes No Not applicable Unknown or not stated	
328	1		FILLER30	FILLER		Blank		
329	1	P,G	F_RF_DRUG	Reporting Flag for Fertility Enhance Drugs			See footnote	
330	1	P,G	F_RF_ART	Reporting Flag for Reproductive Technology			See footnote	
331	1	P,G	RF_CESAR	Previous Cesareans	335	Y N U	Yes No Unknown or not stated	
332-333	2	P,G	RF_CESARN	Number of Previous Cesareans	336	00 01-30 99	None Number of previous cesareans Unknown or not stated	
334	1		FILLER30B	FILLER		Blank		
335	1	P,G	F_RF_CESAR	Reporting Flag for Previous Cesarean			See footnote	
336	1	P,G	F_RF_NCESAR	Reporting Flag for Number of Previous Cesareans			See footnote	
337	1	P,G	RF_NONE	No Risk Factors Checked	126	1 0 9	True False Not Reported	
338-342	5		FILLER31	FILLER		Blank		
343-353	11		<u>Infections Present</u>					
343	1	P,G	IP_GON	Gonorrhea	348	Y	Yes	

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
344	1	P,G	IP_SYPH	Syphilis	349	N	No
345	1	P,G	IP_CHLAM	Chlamydia	350	U	Unknown or not stated
346	1	P,G	IP_HEPB	Hepatitis B	351		
347	1	P,G	IP_HEPC	Hepatitis C	352		
348	1	P,G	F_IP_GON	Reporting Flag for Gonorrhea			See footnote
349	1	P,G	F_IP_SYPH	Reporting Flag for Syphilis			
350	1	P,G	F_IP_CHLAM	Reporting Flag for Chlamydia			
351	1	P,G	F_IP_HEPB	Reporting Flag for Hepatitis B			
352	1	P,G	F_IP_HEPC	Reporting Flag for Hepatitis C			
353	1	P,G	IP_NONE	No Infections Checked	126	1 0 9	True False Not Reported
354-359	6		FILLER32	FILLER		Blank	
360-364	5			<u>Obstetric Procedures</u>			
360	1	P,G	OB_ECVS	Successful External Cephalic Version	363	Y N U	Yes No Unknown or not stated
361	1	P,G	OB_ECVF	Failed External Cephalic Version	364	Y N U	Yes No Unknown or not stated
362	1		FILLER33	FILLER		Blank	
363	1	P,G	F_OB_ECVS	Reporting Flag for Successful External Cephalic Version			See footnote
364	1	P,G	F_OB_ECVF	Reporting Flag for Failed External Cephalic Version			See footnote
365-382	18		FILLER34	FILLER		Blank	
383-395	13			<u>Characteristics of Labor and Delivery</u>			
383	1	P,G	LD_INDL	Induction of Labor	389	Y	Yes
384	1	P,G	LD_AUGM	Augmentation of Labor	390	N	No
385	1	P,G	LD_STER	Steroids	391	U	Unknown or not stated
386	1	P,G	LD_ANTB	Antibiotics	392		
387	1	P,G	LD_CHOR	Chorioamnionitis	393		
388	1	P,G	LD_ANES	Anesthesia	394		

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
389	1	P,G	F_LD_INDL	Reporting Flag for Induction of Labor			See footnote
390	1	P,G	F_LD_AUGM	Reporting Flag for Augmentation of Labor			
391	1	P,G	F_LD_STER	Reporting Flag for Steroids			
392	1	P,G	F_LD_ANTB	Reporting Flag for Antibiotics			
393	1	P,G	F_LD_CHOR	Reporting Flag for Chorioamnionitis			
394	1	P,G	F_LD_ANES	Reporting Flag for Anesthesia			
395	1	P,G	LD_NONE	No Characteristics of Labor Checked	126	1 0 9	True False Not Reported
396-400	5		FILLER35	FILLER		Blank	
401-409	9		<u>Method of Delivery</u>				
401	1	P,G	ME_PRES	Fetal Presentation	404	1 2 3 9	Cephalic Breech Other Unknown or not stated
402	1	P,G	ME_ROUT	Final Route & Method of Delivery	405	1 2 3 4 9	Spontaneous Forceps Vacuum Cesarean Unknown or not stated
403	1	P,G	ME_TRIAL	Trial of Labor Attempted	406	Y N X U	Yes No Not applicable Unknown or not stated
404	1	P,G	F_ME_PRES	Reporting Flag for Fetal Presentation			See footnote
405	1	P,G	F_ME_ROUT	Reporting Flag for Final Route and Method of Delivery			See footnote
406	1	P,G	F_ME_TRIAL	Reporting Flag for Trial of Labor Attempted			See footnote
407	1	P,G	DMETH_R	Delivery Method Recode	409	1 2 3 4 5 6 9	Vaginal (excludes vaginal after previous C-section) Vaginal after previous c-section Primary C-section Repeat C-section Vaginal (unknown if previous c-section) C-section (unknown if previous c-section) Not stated

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
408	1	P,G	DMETH_R3	Delivery Method Recode Combined		1 2 9	Vaginal C-Section Unknown
409	1	P,G	F_DMETH_R	Reporting Flag for Method of Delivery Recode			See footnote
410-414	5		FILLER36	FILLER			Blank
415-427	13			<u>Maternal Morbidity</u>			
415	1	P,G	MM_MTR	Maternal Transfusion	421	Y	Yes
416	1	P,G	MM_PLAC	Perineal Laceration	422	N	No
417	1	P,G	MM_RUPT	Ruptured Uterus	423	U	Unknown or not stated
418	1	P,G	MM_UHYST	Unplanned Hysterectomy	424		
419	1	P,G	MM_AICU	Admit to Intensive Care	425		
420	1		FILLER37	FILLER			Blank
421	1	P,G	F_MM_MTR	Reporting Flag for Maternal Transfusion			See footnote
422	1	P,G	F_MM_PLAC	Reporting Flag for Perineal Laceration			
423	1	P,G	F_MM_RUPT	Reporting Flag for Ruptured Uterus			
424	1	P,G	F_MM_UHYST	Reporting Flag for Unplanned Hysterectomy			
425	1	P,G	F_MM_AICU	Reporting Flag for Admission to Intensive Care			
426	1		FILLER38	FILLER			Blank
427	1	P,G	MM_NONE	No Maternal Morbidity Checked	126	1 0 9	True False Not Reported
428-432	5		FILLER39	FILLER			Blank
433	1	P,G	ATTEND	Attendant		1 2 3 4 5 9	Doctor of Medicine (MD) Doctor of Osteopathy (DO) Certified Nurse Midwife (CNM) Other Midwife Other Unknown or not stated
434	1	P,G	MTRAN	Mother Transferred	126	Y N U	Yes No Unknown
435	1	P,G	PAY	Payment Source	437	1 2 3	Medicaid Private Insurance Self-Pay

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						4	Indian Health Service
						5	CHAMPUS/TRICARE
						6	Other Government (Federal, State, Local)
						8	Other
						9	Unknown
436	1	P,G	PAY_R	Payment Recode	438	1	Medicaid
						2	Private Insurance
						3	Self Pay
						4	Other
						9	Unknown
437	1	P,G	F_PAY	Reporting Flag for Source of Payment			See footnote
438	1	P,G	F_PAY_R	Reporting Flag for Payment Recode			See footnote
439-443	5		FILLER40	FILLER		Blank	
444-445	2	P,G	APGAR5	Five Minute APGAR Score 447		00-10	A score of 0-10
						99	Unknown or not stated
446	1	P,G	APGAR5R	Five Minute APGAR Recode 447		1	A score of 0-3
						2	A score of 4-6
						3	A score of 7-8
						4	A score of 9-10
						5	Unknown or not stated
447	1	P,G	F_APGAR5	Reporting Flag for Five minute APGAR		0	Non-Reporting
						1	Reporting
448-449	2	P,G	APGAR10	Ten Minute APGAR Score Use reporting flag in field 126 for 2016		00-10	A score of 0-10
						88	Not applicable
						99	Unknown or not stated
450	1	P,G	APGAR10R	Ten Minute APGAR Recode Use reporting flag in field 126 for 2016		1	A score of 0-3
						2	A score of 4-6
						3	A score of 7-8
						4	A score of 9-10
						5	Not stated/not applicable
451-453	3		FILLER41	FILLER		Blank	
454	1	P,G	PLURAL_R	Plurality Recode		1	Single
						2	Twin
						3	Triplet
						4	Quadruplet

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						5	Quintuplet or higher
455	1		FILLER42	FILLER		Blank	
456	1	P,G	PLURAL_IMP	Plurality Imputed		Blank 1	Plurality is not imputed Plurality is imputed
457-458	2		FILLER43	FILLER		Blank	
459	1	P,G	SETORDER_R	Set Order Recode	126	1 1 st , 2 2 nd , 3 3 rd , 4 4 th , 5 5 th to 16 th 9	Unknown or not stated
460-474	15		FILLER44	FILLER		Blank	
475	1	P,G	SEX	Sex of Infant		M F	Male Female
476	1	P,G	SEX_IMP	Imputed Sex		Blank 1	Infant Sex not Imputed Infant Sex is Imputed
477-478	2	P,G	DLMP_MM	Last Normal Menses Month		01 02 03 04 05 06 07 08 09 10 11 12 99	January February March April May June July August September October November December Unknown or not stated
479-480	2		FILLER45	FILLER		Blank	
481-484	4	P,G	DLMP_YY	Last Normal Menses Year		nnnn 9999	Year of last normal menses Unknown or not stated
485-487	3		FILLER46	FILLER		Blank	
488	1	P,G	LMPGST_IMP	Combined Gestation Imputed		Blank 1	Combined Gestation is not imputed Combined Gestation is imputed
489	1	P,G	F_OEGESTUSED	Obstetric Estimate of Gestation Used Flag		Blank 1	Clinical Estimate is not used Clinical Estimate is used

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
490-491	2	P,G	LMPGEST	Combined Gestation – Detail in Weeks		17-47 99	17 th through 47 th week of Gestation Unknown
492-493	2	P,G	LMPGEST_R10	Combined Gestation Recode 10		01 02 03 04 05 06 07 08 09 10 99	Under 20 weeks 20-27 weeks 28-31 weeks 32-33 weeks 34-36 weeks 37-38 weeks 39 weeks 40 weeks 41 weeks 42 weeks and over Unknown
494	1	P,G	LMPGEST_R3	Combined Gestation Recode 3		1 2 3	Under 37 weeks 37 weeks and over Not stated
495-497	3		FILLER47	FILLER		Blank	
498	1	P,G	F_LMPUSED	Computed (LMP) Gestation Used Flag		Blank 1	LMP not used for gestation LMP used for gestation
499-500	2	P,G	OEGEST	Obstetric Estimate Edited (NCHS Standard item)		17-47 99	Weeks of gestation Not stated
501-502	2	P,G	OEGEST_R10	Obstetric Estimate Recode10 (NCHS Standard item)		01 02 03 04 05 06 07 08 09 10 99	Under 20 weeks 20-27 weeks 28-31 weeks 32-33 weeks 34-36 weeks 37-38 weeks 39 weeks 40 weeks 41 weeks 42 weeks and over Unknown
503	1	P,G	OEGEST_R3	Obstetric Estimate Recode 3 (NCHS Standard Item)		1 2 3	Under 37 weeks 37 weeks and over Not stated
504-508	5		FILLER48	FILLER		Blank	

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
509-510	2	P,G	BWTR14	Birth Weight Recode 14		01 02 03 04 05 06 07 08 09 10 11 12 13 14	227 - 499 grams 500 – 749 grams 750 – 999 grams 1000 - 1249 grams 1250 – 1499 grams 1500 – 1999 grams 2000 – 2499 grams 2500 – 2999 grams 3000 – 3499 grams 3500 – 3999 grams 4000 – 4499 grams 4500 – 4999 grams 5000 – 8165 grams Not Stated
511	1	P,G	BWTR4	Birth Weight Recode 4		1 2 3 4	227 - 1499 grams 1500 – 2499 grams 2500 - 8165 grams Unknown or not stated
512-515	4	P,G	BRTHWGT	Imputed Birth Weight		0227-8165 9999	Number of grams Not stated birth weight
516	1		FILLER49	FILLER			Blank

The following checkbox fields 517-566 include data for revised states only. For national data for items that are comparable across revisions see fields 1340-1345.

Position	Len	File*	Field	Description	Flag Position	Values	Definition
517-531	15			<u>Abnormal Conditions of the Newborn</u>			
517	1	P,G	AB_AVENT	Assisted Ventilation	524	Y	Yes
518	1	P,G	AB_AVEN6	Assisted Ventilation > 6 hrs	525	N	No
519	1	P,G	AB_NICU	Admission to NICU	526	U	Unknown or not stated
520	1	P,G	AB_SURF	Surfactant	527		
521	1	P,G	AB_ANTI	Antibiotics	528		
522	1	P,G	AB_SEIZ	Seizures	529		
523	1		FILLER50	FILLER			Blank
524	1	P,G	F_AB_AVENT	Reporting Flag for Assisted Ventilation			See footnote
525	1	P,G	F_AB_AVEN6	Reporting Flag for Assisted Ventilation >6 hrs			
526	1	P,G	F_AB_NICU	Reporting Flag for Admission to NICU			
527	1	P,G	F_AB_SURF	Reporting Flag for Surfactant			
528	1	P,G	F_AB_ANTI	Reporting Flag for Antibiotics			
529	1	P,G	F_AB_SEIZ	Reporting Flag for Seizures			

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition	
530	1	P,G	FILLER51	FILLER		Blank		
531	1	P,G	AB_NONE	No Abnormal Conditions Checked	126	1 0 9	True False Not Reported	
532-536	5	P,G	FILLER52	FILLER		Blank		
537-561	25		<u>Congenital Anomalies of the Newborn</u>					
537	1	P,G	CA_ANEN	Anencephaly	543	Y	Yes	
538	1	P,G	CA_MNSB	Meningomyelocele / Spina Bifida	544	N	No	
539	1	P,G	CA_CCHD	Cyanotic Congenital Heart Disease	545	U	Unknown or not stated	
540	1	P,G	CA_CDH	Congenital Diaphragmatic Hernia	546			
541	1	P,G	CA_OMP	Omphalocele	547			
542	1	P,G	CA_GAST	Gastroschisis	548			
543	1	P,G	F_CA_ANEN	Reporting Flag for Anencephaly			See footnote	
544	1	P,G	F_CA_MNSB	Flag for Meningomyelocele/Spina Bifida				
545	1	P,G	F_CA_CCHD	Reporting Flag for Cyanotic Congenital Heart Disease				
546	1	P,G	F_CA_CDH	Reporting Flag for Congenital Diaphragmatic Hernia				
547	1	P,G	F_CA_OMP	Reporting Flag for Omphalocele				
548	1	P,G	F_CA_GAST	Reporting Flag for Gastroschisis				
549	1	P,G	CA_LIMB	Limb Reduction Defect	555	Y	Yes	
550	1	P,G	CA_CLEFT	Cleft Lip w/ or w/o Cleft Palate	556	N	No	
551	1	P,G	CA_CLPAL	Cleft Palate alone	557	U	Unknown or not stated	
552	1	P,G	CA_DOWN	Down Syndrome	558	C P N U	Confirmed Pending No Unknown	
553	1	P,G	CA_DISOR	Suspected Chromosomal Disorder	559	C P N U	Confirmed Pending No Unknown	
554	1	P,G	CA_HYPO	Hypospadias	560	Y N U	Yes, anomaly reported No, anomaly not reported Unknown	
555	1	P,G	F_CA_LIMB	Reporting Flag for Limb Reduction Defect			See footnote	
556	1	P,G	F_CA_CLEFT	Flag for Cleft Lip with or without Cleft Palate				
557	1	P,G	F_CA_CLPAL	Reporting Flag for Cleft Plate Alone				
558	1	P,G	F_CA_DOWN	Reporting Flag for Down Syndrome				

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
559	1	P,G	F_CA_DISOR	Reporting Flag for Suspected Chromosomal Disorder			
560	1	P,G	F_CA_HYPO	Reporting Flag for Hypospadias			
561	1	P,G	CA_NONE	No Congenital Anomalies Checked	126	1 0 9	True False Not Reported
562-566	5	P,G	FILLER53	FILLER		Blank	
567	1	P,G	ITRAN	Infant Transferred	126	Y N U	Yes No Unknown or not stated
568	1	P,G	ILIVE	Infant Living at Time of Report	126	Y N U	Yes No Unknown or not stated
569	1	P,G	BFED	Infant Being Breastfed	570	Y N U	Yes No Unknown or not stated
570	1	P,G	F_BFED	Reporting Flag for Breastfed at Discharge		0 1	Non-Reporting Reporting
571-1329	759		FILLER54	FILLER		Blank	

The following items (fields 1330-1338 and 1340-1345) are comparable across revisions and include data for revised and unrevised reporting areas.

1330	1	P,G	uBFacil	Place of birth		1 2 3 4 5 9	Hospital Freestanding Birthing Center Clinic / Doctor's Office Residence Other Unknown
1331-1345			Unrevised Check Boxes	All checkbox items below follow this coding structure:		1 2 9	Yes No Unknown
1331	1	P,G	uRF_Diab	Diabetes			
1332	1	P,G	uRF_Chype	Chronic Hypertension			
1333	1	P,G	uRF_Phype	Prepregnancy Associated Hypertension			
1334	1	P,G	uRf_Ehype	Eclampsia	338		
1335	1	P,G	uME_Forc	Forceps			

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
1336	1	P,G	uME_Vacu	Vacuum			
1337	1	P,G	uOB_Indu	Induction of Labor			
1338	1	P,G	uLD_Bree	Breech			
1339	1	P,G	FILLER55	FILLER		Blank	
1340	1	P,G	uCA_Anen	Anencephaly			
1341	1	P,G	uCA_Spina	Spina Bifida / Meningocele			
1342	1	P,G	uCA_Omph	Omphalocele / Gastroschisis			
1343	1	P,G	uCA_Clip	Cleft Lip / Palate			
1344	1	P,G	uCA_Hern	Diaphragmatic Hernia			
1345	1	P,G	uCA_Down	Down Syndrome			
1346	1	P,G	FLGND	Match Status		1 Blank	Record in both files Record not in both files

Here ends the Denominator file. Documentation of the Mortality Section of the Numerator (Linked) file begins below.

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
1347-1355	9	FILLER56		FILLER		Blank	
1356-1358	3	AGED		Age at Death in Days		000-365	Number of days
1359	1	AGER5		Infant age recode 5		1 2 3 4 5	Under 1 hour 1 – 23 hours 1 – 6 days 7 – 27 days (late neonatal) 28 days and over (postneonatal)
1360-1361	2	AGER22		Infant age recode 22		Blank 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22	Age 1 year and over or not stated Under 1 hour (includes not stated hours and minutes) 1 – 23 hours 1 day (includes not stated days) 2 days 3 days 4 days 5 days 6 days 7 days (includes not stated weeks) 14 – 20 days 21 – 27 days 1 month (includes not stated months) 2 months 3 months 4 months 5 months 6 months 7 months 8 months 9 months 10 months 11 months
1362	1	MANNER		Manner of Death		1 2 3 4 5 6 7 Blank	Accident Suicide Homicide Pending investigation Could not determine Self-inflicted Natural Not specified
1363	1	DISPO		Method of Disposition		B	Burial

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						C	Cremation
						O	Other
						U	Unknown
1364	1	AUTOPSY	Autopsy			Y	Yes
						N	No
						U	Unknown
1365	1	FILLER57	FILLER			Blank	
1366	1	PLACE	Place of injury for causes W00-Y34, except Y06.- and Y07.-			0	Home
						1	Residential institution
						2	School, other institution and public administrative area
						1	Sports and athletics area
						2	Street and highway
						3	Trade and service area
						4	Industrial and construction area
						5	Farm
						6	Other Specified Places
						7	Unspecified place
						Blank	Cause other than W00-Y34, except Y06.- and Y07.-
1367	1	FILLER58	FILLER			Blank	
<u>UNDERLYING CAUSE OF DEATH</u>							
1368-1371	4	UCOD	ICD Code (10th Revision) See the <u>International Classification of Diseases, 1992 Revision, Volume 1.</u>				
1372	1	FILLER59	FILLER			Blank	
1373-1375	3	UCODR130	130 Infant Cause Recode				
1376	1	FILLER60	FILLER			Blank	
1377-1384	8	RECWT	Record Weight (no weights computed for possessions file)			1.XXXXXX	
1385-1386	2	FILLER61	FILLER			Blank	
<u>MULTIPLE CONDITIONS</u>							
1387-1388	2	EANUM	Number of Entity-Axis Conditions	00-20		Code range	
1389-1528	140	ENTITY	Entity-Axis Conditions Space has been provided for a maximum of 20 conditions. Each condition takes 7 positions in the record. The 7 th				

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
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position will be blank. Records that do not have 20 conditions are blank in the unused area.

Position 1: Part/line number on certificate

1	...	Part I, line 1 (a)
2	...	Part I, line 2 (b)
3	...	Part I, line 3 (c)
4	...	Part I, line 4 (d)
5	...	Part I, line 5 (e)
6	...	Part II,

Position 2: Sequence of condition within part/line

1-7	...	Code range
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Position 3 – 6: Condition code

1389-1395	7	1 st Condition
1396-1402	7	2 nd Condition
1403-1409	7	3 rd Condition
1410-1416	7	4 th Condition
1417-1423	7	5 th Condition
1424-1430	7	6 th Condition
1431-1437	7	7 th Condition
1438-1444	7	8 th Condition
1445-1451	7	9 th Condition
1452-1458	7	10 th Condition
1459-1465	7	11 th Condition
1466-1472	7	12 th Condition
1473-1479	7	13 th Condition
1480-1486	7	14 th Condition
1487-1493	7	15 th Condition
1494-1500	7	16 th Condition
1501-1507	7	17 th Condition
1508-1514	7	18 th Condition
1515-1521	7	19 th Condition
1522-1528	7	20 th Condition

1529-1530	2	FILLER62	FILLER		Blank
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1531-1532	2	RANUM	Number of Record-Axis Conditions	00-20	Code range
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1533-1632	100	RECORD	Record-Axis Conditions	Space has been provided for a maximum of 20 conditions. Each condition takes 5 positions in the record. The 5 th position will be blank. Records that do not have 20 conditions are blank in the unused area.	
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Positions 1 – 4: Condition Code

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
1533-1537	5			1 st Condition			
1538-1542	5			2 nd Condition			
1543-1547	5			3 rd Condition			
1548-1552	5			4 th Condition			
1553-1557	5			5 th Condition			
1558-1562	5			6 th Condition			
1563-1567	5			7 th Condition			
1568-1572	5			8 th Condition			
1573-1577	5			9 th Condition			
1578-1582	5			10 th Condition			
1583-1587	5			11 th Condition			
1588-1592	5			12 th Condition			
1593-1597	5			13 th Condition			
1598-1602	5			14 th Condition			
1603-1607	5			15 th Condition			
1608-1612	5			16 th Condition			
1613-1617	5			17 th Condition			
1618-1622	5			18 th Condition			
1623-1627	5			19 th Condition			
1628-1632	5			20 th Condition			
1633-1669	37	FILLER63		FILLER		Blank	
1670	1	HOSPD		Place of Death and Decedent's Status		1 2 8 9 10 11 12 9	Hospital, clinic or Medical Center – Inpatient Hospital, clinic or Medical Center – Outpatient or admitted to Emergency Room Hospital, clinic or Medical Center – Dead on Arrival Decedent's home Hospice facility Nursing home/long term care Other Place of death unknown
1671	1	DWEEKDAY		Day of Week of Death		1 2 3 4 5 6 7 9	Sunday Monday Tuesday Wednesday Thursday Friday Saturday Unknown
1672-1675	4	DOD_YY		Data Year		2016	2016
1676-1741	66	FILLER64		FILLER		Blank	

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
1742-1743	2	DOD_MM		Month of Death		01 02 03 04 05 06 07 08 09 10 11 12	January February March April May June July August September October November December

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
ADDENDUM							
Detailed geographic information for the territories.							
24-25	2	T,G	OSTATE	Occurrence Postal State <u>U.S. Territories</u>			GU Guam, PR Puerto Rico, VI Virgin Islands
28-30	3	T,G	OCNTYFIPS	Occurrence FIPS County		000-999	County of Occurrence
31	1	T,G	OCNTYPOP	Occurrence County Population		0 1 2 3 4 5 6 9	County of 1,000,000 or more County of 500,000 to 1,000,000 County of 250,000 to 500,000 County of 100,000 to 250,000 County of 50,000 to 100,000 County of 25,000 to 50,000 County of 10,000 to 25,000 County less than 10,000
80-81	2	T,G	MBCNTRY	Mother's Birth Country		AA-ZZ	See Geographic Documentation
85-86	2	G	MRCNTRY	Mother's Residence Country		AA-ZZ	See Geographic Documentation
89-90	2	T,G	MRSTATEPSTL	Mother's Residence Postal State <u>U.S. Territories</u> <u>Foreign</u>			GU Guam, PR Puerto Rico, VI Virgin Islands CC Canada, CU Cuba, MX Mexico, XX Not Applicable, ZZ Not Classifiable
91-93	3	T,G	MRCNTYFIPS	Mother's FIPS County		000-998 999	See Geographic Tables Foreign
99	1	T,G	RCNTY_POP	Population of Residence County		0 1 2 3 4 5 6 9 Z	County of 1,000,000 or more County of 500,000 to 1,000,000 County of 250,000 to 500,000 County of 100,000 to 250,000 County of 50,000 to 100,000 County of 25,000 to 50,000 County of 10,000 to 25,000 County less than 10,000 Foreign resident
100	1	G	RCITY_POP	Population of Residence City		0 1 2 9 Z	City of 1,000,000 or more City of 500,000 to 1,000,000 City of 250,000 to 500,000 City of less than 250,000 Foreign resident

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
103	1	T,G	RECTYPE	Record Type		1 2	RESIDENT: State and county of occurrence and residence are the same. NONRESIDENT: State and county of occurrence and residence are different.
1635	1		D_RESTATUS	Death Resident Status			
				Puerto Rico Occurrence		1 2 3 4	RESIDENTS Territory and County-equivalent of Occurrence and Residence are the same. INTRASTATE NONRESIDENTS Territory of Occurrence and Residence are the same, but County-equivalent is different. INTERTERRITORY NONRESIDENTS Territory of occurrence and residence are different, but both are a Territory. FOREIGN RESIDENTS Occurred in Puerto Rico to a resident of any other place.
				Virgin Islands Occurrence		1 2 3 4	RESIDENTS Territory and County-equivalent of Occurrence and Residence are the same. INTRASTATE NONRESIDENTS Territory of Occurrence and Residence are the same, but County-equivalent is different. INTERTERRITORY NONRESIDENTS Territory of occurrence and residence are different, but both are a Territory. FOREIGN RESIDENTS Occurred in Virgin Islands to a resident of any other place.
				Guam Occurrence		1 3 4	RESIDENTS Occurred in Guam to a resident of Guam or to a resident of the U.S. INTERTERRITORY NONRESIDENTS Territory of occurrence and residence are different, but both are a Territory. FOREIGN RESIDENTS Occurred in Guam to a resident of any place other than Guam or the U.S.
1636-1637	2		DOSTATE	State of Occurrence (FIPS) of Death		PR VI GU	Puerto Rico Virgin Islands Guam
1638-1640	3		DOCNTY	County of Occurrence (FIPS) of Death			

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag	Position	Values	Definition
				Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State and identify each county. (Note: To uniquely identify a county, both the state and county codes must be used.) A complete list of counties is shown in the Geographic Code Outline further back in this document.			001-nnn	Code range
1641-1643	3		FILLER65	FILLER			Blank	
1644-1645	2		DRSTATE	State of Residence (FIPS)			PR VI GU	Puerto Rico Virgin Islands Guam
				Puerto Rico Occurrence			PR	Puerto Rico
							AL-WY, VI,AS,GU, MP,ZZ	Foreign residents: refer to U.S. for specific code structure.
				Virgin Islands Occurrence			VI	Virgin Islands
							AL-WY, PR,AS,GU, MP, ZZ	Foreign residents: refer to U.S. for specific code structure.
				Guam Occurrence			GU	Guam
							AL-WY U.S. resident. Also considered a resident of Guam.	
							PR, AS, VI, MP, ZZ	Foreign residents: refer to U.S. for specific code structure.
1646-1647	2		FILLER66	FILLER			Blank	
1648-1649	2		DRSTCNTRY	State/Country of Residence of Death Recode				
				Territorial resident			PR VI GU	Puerto Rico Virgin Islands Guam
				Foreign residents			CC MX CU YY	Canada Mexico Cuba Remainder of the world
				Puerto Rico Occurrence			PR	Puerto Rico
							AL-ZZ	Foreign residents: refer to U.S. for specific code structure.
				Virgin Islands Occurrence			VI	Virgin Islands
							AL-ZZ	Foreign residents: refer to U.S. for specific code structure.
				Guam Occurrence			GU	Guam
							AL-WY U.S. resident. Also considered a resident of Guam	
							PR,VI,AS, MP,ZZ	

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
							Foreign residents: refer to U.S. for specific code structure.
1650-1652	3		DRCNTY	County of Residence (FIPS) of Death (To uniquely identify a county, both the state and county codes must be used.)		000 001-999	Foreign residents Code range
1653-1665	13		FILLER67	FILLER			Blank
1666	1		DRCNTYPOP	Population Size of County of Residence of Death Based on the results of the 2010 Census		0 1 2 3 4 5 6 9 Z	County of 1,000,000 or more County of 500,000 to 1,000,000 County of 250,000 to 500,000 County of 100,000 to 250,000 County of 50,000 to 100,000 County of 25,000 to 50,000 County of 10,000 to 25,000 County less than 10,000 Foreign residents

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Documentation Table 1. Live births and infant death by state of occurrence of birth and by state of residence at birth
 United States, Puerto Rico, Virgin Islands, and Guam, 2016 period Data.
 (Residence of birth is of the mother.)

State	Live Births		Infant Deaths				Infant Mortality Rate
	Occurrence	Residence	Unweighted		Weighted 1/		
			Occurrence	Residence	Occurrence	Residence	
United States /2	3956112	3945875	23079	23044	23192	23157	5.87
Alabama	57647	59151	526	534	526	534	9.03
Alaska	11095	11209	55	58	55	58	5.17
Arizona	85573	84520	442	447	445	450	5.32
Arkansas	36913	38274	308	312	310	314	8.20
California	489976	488827	2059	2055	2067	2063	4.22
Colorado	67183	66613	342	317	342	317	4.76
Connecticut	37467	36015	167	172	167	172	4.78
Delaware	11415	10992	86	86	86	86	7.82
Dist of Columbia	14847	9858	112	71	112	71	7.20
Florida	225260	225022	1391	1382	1391	1382	6.14
Georgia	130961	130042	967	968	971	972	7.47
Hawaii	18057	18059	113	109	113	109	6.04
Idaho	22179	22482	125	131	125	131	5.83
Illinois	150789	154445	939	985	939	985	6.38
Indiana	83983	83091	608	613	609	614	7.39
Iowa	39094	39403	213	235	213	235	5.96
Kansas	39317	38053	222	228	222	228	5.99
Kentucky	53062	55449	325	367	334	376	6.78
Louisiana	63277	63178	502	503	503	504	7.98
Maine	12477	12705	74	72	75	73	5.75
Maryland	69832	73136	455	477	456	478	6.54
Massachusetts	71935	71317	291	281	291	281	3.94
Michigan	112349	113315	715	726	716	727	6.42
Minnesota	68831	69749	366	358	366	358	5.13
Mississippi	37139	37928	304	329	304	329	8.67
Missouri	75864	74705	541	491	542	492	6.59
Montana	12280	12282	70	71	70	71	5.78
Nebraska	27101	26589	175	160	176	161	6.06
Nevada	35918	36260	204	209	204	209	5.76
New Hampshire	12350	12267	39	45	39	45	3.67
New Jersey	100379	102647	402	411	405	414	4.03
New Mexico	23322	24692	136	151	137	152	6.16
New York	114494	118892	572	610	578	616	5.18
New York City	120367	115391	468	439	469	440	3.81
North Carolina	122780	120779	888	874	888	874	7.24
North Dakota	13025	11383	81	73	81	73	6.41
Ohio	138570	138085	1052	1023	1055	1026	7.43
Oklahoma	51319	52592	376	392	377	393	7.47
Oregon	45973	45535	221	214	221	214	4.70
Pennsylvania	138637	139409	882	857	882	857	6.15
Rhode Island	11430	10798	67	60	67	60	5.56
South Carolina	53810	57342	380	402	380	402	7.01
South Dakota	12910	12275	65	60	65	60	4.89
Tennessee	86540	80807	666	592	668	594	7.35
Texas	406945	398047	2248	2222	2304	2277	5.72
Utah	51521	50464	287	273	288	274	5.43
Vermont	5567	5756	17	20	17	20	3.47
Virginia	101216	102460	565	595	569	599	5.85
Washington	90301	90505	391	390	392	391	4.32
West Virginia	19887	19079	149	138	149	138	7.23
Wisconsin	66238	66615	401	419	402	420	6.3
Wyoming	6710	7386	29	37	29	37	5.01
Puerto Rico	28326	28257	219	215	219	215	7.61
Guam	3433	3427	45	44	45	44	12.84

1/ Figures are based on weighted data rounded to the nearest infant, so categories may not add to totals.

2/ Excludes data for Puerto Rico and Guam.

* Data not available

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2016 period Data.

[Rates are per 1,000 live births]

Race of mother and sex	Total	<500 grams	500-749 grams	750-999 grams	1000-1249 grams	1250-1499 grams	1500-1999 grams	2000-2499 grams	2500 grams or more	Not Stated
All races										
Both sexes										
Live births.....	3,945,875	6,434	9,650	10,792	13,044	16,043	62,880	203,883	3,619,575	3,574
Infant deaths.....	23,157	5,473	3,695	1,330	714	666	1,614	1,965	7,549	152
Infant Mortality Rate.....	5.87	850.64	382.90	123.24	54.74	41.51	25.67	9.64	2.09	42.53
Male										
Live births.....	2,018,183	3,316	4,872	5,442	6,728	8,038	30,462	92,961	1,864,482	1,882
Infant deaths.....	12,871	2,898	2,105	798	411	356	853	1,031	4,315	104
Infant Mortality Rate.....	6.38	873.94	432.06	146.64	61.09	44.29	28.00	11.09	2.31	55.26
Female										
Live births.....	1,927,692	3,118	4,778	5,350	6,316	8,005	32,418	110,922	1,755,093	1,692
Infant deaths.....	10,286	2,575	1,590	532	303	310	761	934	3,234	47
Infant Mortality Rate.....	5.34	825.85	332.78	99.44	47.97	38.73	23.47	8.42	1.84	27.78
Non-Hispanic White										
Both sexes										
Live births.....	2,056,332	2,119	3,364	4,255	5,527	7,007	28,589	92,705	1,910,901	1,865
Infant deaths.....	9,974	1,835	1,400	567	322	307	775	891	3,818	59
Infant Mortality Rate.....	4.85	865.97	416.17	133.25	58.26	43.81	27.11	9.61	2.00	31.64
Male										
Live births.....	1,054,533	1,083	1,744	2,155	2,838	3,500	13,738	41,914	986,570	991
Infant deaths.....	5,577	970	818	341	184	162	406	470	2,188	39
Infant Mortality Rate.....	5.29	895.66	469.04	158.24	64.83	46.29	29.55	11.21	2.22	39.35
Female										
Live births.....	1,001,799	1,036	1,620	2,100	2,689	3,507	14,851	50,791	924,331	874
Infant deaths.....	4,397	866	582	225	138	146	369	421	1,630	20
Infant Mortality Rate.....	4.39	835.91	359.26	107.14	51.32	41.63	24.85	8.29	1.76	22.88
Non-Hispanic Black										
Both sexes										
Live births.....	558,622	2,372	3,315	3,389	3,522	4,185	14,889	44,952	481,398	600
Infant deaths.....	6,354	1,985	1,147	370	176	157	362	477	1,633	48
Infant Mortality Rate.....	11.37	836.85	346.00	109.18	49.97	37.51	24.31	10.61	3.39	80.00
Male										
Live births.....	282,923	1,229	1,634	1,673	1,762	1,984	6,953	20,026	247,358	304
Infant deaths.....	3,508	1,064	649	219	93	76	197	256	919	35
Infant Mortality Rate.....	12.40	865.74	397.18	130.90	52.78	38.31	28.33	12.78	3.72	115.13

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2016 period Data -Con.

[Rates are per 1,000 live births]

Race of mother and sex	Total	<500 grams	500-749 grams	750-999 grams	1000-1249 grams	1250-1499 grams	1500-1999 grams	2000-2499 grams	2500 grams or more	Not Stated
Female										
Live births.....	275,699	1,143	1,681	1,716	1,760	2,201	7,936	24,926	234,040	296
Infant deaths.....	2,845	921	498	151	82	80	166	221	714	13
Infant Mortality Rate.....	10.32	805.77	296.25	88.00	46.59	36.35	20.92	8.87	3.05	*
Non-Hispanic American Indian or Alaskan Native /1										
Both sexes										
Live births.....	31,452	45	90	78	101	131	483	1,523	28,987	14
Infant deaths.....	297	41	38	17	8	10	17	16	149	-
Infant Mortality Rate.....	9.44	911.11	422.22	*	*	*	*	*	5.14	-
Male										
Live births.....	15,882	31	38	41	64	74	231	735	14,660	8
Infant deaths.....	170	30	19	6	5	6	4	7	93	-
Infant Mortality Rate.....	10.70	967.74	*	*	*	*	*	*	6.34	-
Female										
Live births.....	15,570	14	52	37	37	57	252	788	14,327	6
Infant deaths.....	126	11	19	11	3	4	13	9	56	-
Infant Mortality Rate.....	8.09	*	*	*	*	*	*	*	3.91	-
Non-Hispanic Asian										
Both sexes										
Live births.....	254,471	279	449	485	691	919	3,822	14,839	232,799	188
Infant deaths.....	925	244	201	46	19	32	58	73	244	7
Infant Mortality Rate.....	3.63	874.55	447.66	94.85	*	34.82	15.18	4.92	1.05	*
Male										
Live births.....	131,568	146	224	272	370	502	1,961	7,001	120,992	100
Infant deaths.....	533	132	113	33	12	17	36	39	146	4
Infant Mortality Rate.....	4.05	904.11	504.46	121.32	*	*	18.36	5.57	1.21	*
Female										
Live births.....	122,903	133	225	213	321	417	1,861	7,838	111,807	88
Infant deaths.....	392	112	87	13	7	15	22	34	98	3
Infant Mortality Rate.....	3.19	842.11	386.67	61.03	21.81	35.97	11.82	4.34	0.88	34.09
Non-Hispanic Native Hawaiian or Other Pacific Islander										
Both sexes										
Live births.....	9,342	12	22	33	38	34	149	430	8,619	5
Infant deaths.....	69	11	10	5	2	1	5	4	30	1
Infant Mortality Rate.....	7.39	*	*	*	*	*	*	*	3.48	*

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2016

[Rates are per 1,000 live births]

Race of mother and sex	Total	<500 grams	500-749 grams	750-999 grams	1000-1249 grams	1250-1499 grams	1500-1999 grams	2000-2499 grams	2500 grams or more	Not Stated
Male										
Live births.....	4,780	5	9	15	27	22	81	207	4,410	4
Infant deaths.....	38	4	6	1	2	1	4	3	16	1
Infant Mortality Rate.....	7.95	*	*	*	*	*	*	*	*	*
Female										
Live births.....	4,562	7	13	18	11	12	68	223	4,209	1
Infant deaths.....	31	7	4	4	-	-	1	1	14	-
Infant Mortality Rate.....	6.80	*	*	*	-	-	*	*	*	-
Hispanic										
Both sexes										
Live births.....	918,447	1,289	2,051	2,204	2,721	3,245	12,910	42,926	850,690	411
Infant deaths.....	4,555	1,072	748	271	165	140	339	429	1,371	18
Infant Mortality Rate.....	4.96	831.65	364.70	122.96	60.64	43.14	26.26	9.99	1.61	*
Male										
Live births.....	468,504	659	1,046	1,089	1,437	1,675	6,484	20,103	435,796	215
Infant deaths.....	2,512	550	416	169	103	85	182	218	778	12
Infant Mortality Rate.....	5.36	834.60	397.71	155.19	71.68	50.75	28.07	10.84	1.79	*
Female										
Live births.....	449,943	630	1,005	1,115	1,284	1,570	6,426	22,823	414,894	196
Infant deaths.....	2,043	523	332	102	62	55	158	212	593	6
Infant Mortality Rate.....	4.54	830.16	330.35	91.48	48.29	35.03	24.59	9.29	1.43	*

* Figure does not meet standard of reliability or precision: based on fewer than 20 deaths in the numerator

- Quantity zero

1/ Includes Aleut and Eskimos

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2016 period data
 [Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
All Races										
Total										
Live births.....	3,945,875	26,618	36,239	45,979	279,382	2,473,848	814,775	251,667	13,913	3,454
Infant deaths.....	23,157	10,373	1,578	925	2,416	5,943	1,255	375	60	232
Infant Mortality Rate.....	5.87	389.70	43.54	20.12	8.65	2.40	1.54	1.49	4.31	67.17
Less than 2,500 grams										
Live births.....	322,726	26,375	35,091	42,231	119,837	93,467	4,503	724	107	391
Infant deaths.....	15,456	10,365	1,528	820	1,495	1,072	81	25	7	63
Infant Mortality Rate.....	47.89	392.99	43.54	19.42	12.48	11.47	17.99	34.53	*	161.13
Less than 500 grams										
Live births.....	6,434	6,272	80	6	7	6	-	2	-	61
Infant deaths.....	5,473	5,403	40	2	-	1	-	2	-	25
Infant Mortality Rate.....	850.64	861.45	500.00	*	-	*	-	*	-	409.84
500-749 grams										
Live births.....	9,650	8,858	728	25	11	4	-	1	-	23
Infant deaths.....	3,695	3,547	128	5	4	1	-	-	-	10
Infant Mortality Rate.....	382.90	400.43	175.82	*	*	*	-	-	-	*
750-999 grams										
Live births.....	10,792	7,345	3,069	227	56	53	17	8	1	16
Infant deaths.....	1,330	1,057	215	29	10	7	-	-	-	11
Infant Mortality Rate.....	123.24	143.91	70.06	127.75	*	*	-	-	-	*
1,000-1,249 grams										
Live births.....	13,044	3,208	8,036	1,158	374	203	30	7	3	25
Infant deaths.....	714	250	336	56	51	14	-	-	-	6
Infant Mortality Rate.....	54.74	77.93	41.81	48.36	136.36	*	-	-	-	*
1,250-1,499 grams										
Live births.....	16,043	435	9,899	3,710	1,569	357	53	6	5	9
Infant deaths.....	666	45	346	120	107	47	1	-	-	-
Infant Mortality Rate.....	41.51	103.45	34.95	32.35	68.20	131.65	*	-	-	-
1,500-1,999 grams										
Live births.....	62,880	176	11,862	21,358	23,751	5,359	246	46	17	65
Infant deaths.....	1,614	47	374	364	513	288	14	5	3	6
Infant Mortality Rate.....	25.67	267.05	31.53	17.04	21.60	53.74	*	*	*	*
2,000-2,499 grams										
Live births.....	203,883	81	1,417	15,747	94,069	87,485	4,157	654	81	192
Infant deaths.....	1,965	16	89	244	810	714	65	18	4	4
Infant Mortality Rate.....	9.64	*	62.81	15.50	8.61	8.16	15.64	*	*	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2016 period data -Con.
 [Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
2,500 grams or more										
Live births.....	3,619,575	101	1,049	3,652	159,300	2,379,152	809,752	250,800	13,787	1,982
Infant deaths.....	7,549	7	48	104	920	4,871	1,172	349	53	24
Infant Mortality Rate.....	2.09	*	45.76	28.48	5.78	2.05	1.45	1.39	3.84	12.11
Not Stated										
Live births.....	3,574	142	99	96	245	1,229	520	143	19	1,081
Infant deaths.....	152	1	2	1	-	1	2	-	-	144
Infant Mortality Rate.....	42.53	*	*	*	-	*	*	-	-	133.21
Non-Hispanic White										
Total										
Live births.....	2,056,332	9,766	16,101	21,956	138,031	1,265,832	444,886	149,525	8,826	1,409
Infant deaths.....	9,974	3,768	724	431	1,210	2,900	637	202	22	80
Infant Mortality Rate.....	4.85	385.83	44.97	19.63	8.77	2.29	1.43	1.35	2.49	56.78
Less than 2,500 grams										
Live births.....	143,566	9,661	15,578	20,096	55,813	40,019	1,856	332	44	167
Infant deaths.....	6,097	3,762	690	380	721	484	32	10	2	15
Infant Mortality Rate.....	42.47	389.40	44.29	18.91	12.92	12.09	17.24	*	*	*
Less than 500 grams										
Live births.....	2,119	2,066	27	3	2	4	-	-	-	17
Infant deaths.....	1,835	1,814	17	1	-	-	-	-	-	3
Infant Mortality Rate.....	865.97	878.03	*	*	-	-	-	-	-	*
500-749 grams										
Live births.....	3,364	3,057	283	11	5	3	-	-	-	5
Infant deaths.....	1,400	1,336	55	3	3	1	-	-	-	2
Infant Mortality Rate.....	416.17	437.03	194.35	*	*	*	-	-	-	*
750-999 grams										
Live births.....	4,255	2,845	1,242	101	22	28	7	5	-	5
Infant deaths.....	567	449	90	14	3	5	-	-	-	5
Infant Mortality Rate.....	133.25	157.82	72.46	*	*	*	-	-	-	*
1,000-1,249 grams										
Live births.....	5,527	1,378	3,332	507	174	99	18	6	1	12
Infant deaths.....	322	113	150	30	21	6	-	-	-	1
Infant Mortality Rate.....	58.26	82.00	45.02	59.17	120.69	*	-	-	-	*
1,250-1,499 grams										
Live births.....	7,007	203	4,323	1,565	744	140	24	3	2	3
Infant deaths.....	307	18	147	64	54	24	-	-	-	-
Infant Mortality Rate.....	43.81	*	34.00	40.89	72.58	171.43	-	-	-	-

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2016 period data -Con.

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
1,500-1,999 grams										
Live births.....	28,589	82	5,682	9,798	10,512	2,368	93	25	6	23
Infant deaths.....	775	27	190	155	248	143	7	2	-	2
Infant Mortality Rate.....	27.11	329.27	33.44	15.82	23.59	60.39	*	*	-	*
2,000-2,499 grams										
Live births.....	92,705	30	689	8,111	44,354	37,377	1,714	293	35	102
Infant deaths.....	891	4	41	113	392	305	25	8	2	2
Infant Mortality Rate.....	9.61	*	59.51	13.93	8.84	8.16	14.59	*	*	*
2,500 grams or more										
Live births.....	1,910,901	46	466	1,804	82,063	1,225,029	442,681	149,088	8,768	956
Infant deaths.....	3,818	5	31	51	489	2,414	604	192	20	11
Infant Mortality Rate.....	2.00	*	66.52	28.27	5.96	1.97	1.36	1.29	2.28	*
Not Stated										
Live births.....	1,865	59	57	56	155	784	349	105	14	286
Infant deaths.....	59	1	2	-	-	1	1	-	-	54
Infant Mortality Rate.....	31.64	*	*	-	-	*	*	-	-	188.81
Non-Hispanic Black										
Total										
Live births.....	558,622	8,729	8,987	9,785	49,333	352,194	99,282	28,154	1,652	506
Infant deaths.....	6,354	3,442	378	190	549	1,368	265	71	15	76
Infant Mortality Rate.....	11.37	394.32	42.06	19.42	11.13	3.88	2.67	2.52	*	150.20
Less than 2,500 grams										
Live births.....	76,624	8,658	8,768	9,200	25,871	22,826	1,044	143	18	96
Infant deaths.....	4,673	3,442	369	178	369	257	22	7	2	26
Infant Mortality Rate.....	60.99	397.55	42.08	19.35	14.26	11.26	21.07	*	*	270.83
Less than 500 grams										
Live births.....	2,372	2,322	27	-	3	2	-	2	-	16
Infant deaths.....	1,985	1,961	8	-	-	1	-	2	-	13
Infant Mortality Rate.....	836.85	844.53	*	-	-	*	-	*	-	*
500-749 grams										
Live births.....	3,315	3,073	224	10	2	-	-	-	-	6
Infant deaths.....	1,147	1,103	38	1	1	-	-	-	-	4
Infant Mortality Rate.....	346.00	358.93	169.64	*	*	-	-	-	-	*
750-999 grams										
Live births.....	3,389	2,322	974	62	15	8	3	1	-	4
Infant deaths.....	370	294	65	4	4	-	-	-	-	2
Infant Mortality Rate.....	109.18	126.61	66.74	*	*	-	-	-	-	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2016 period data -Con.

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
500-749 grams										
Live births.....	90	82	8	-	-	-	-	-	-	-
Infant deaths.....	38	38	-	-	-	-	-	-	-	-
Infant Mortality Rate.....	422.22	463.41	-	-	-	-	-	-	-	-
750-999 grams										
Live births.....	78	58	17	2	-	-	-	-	-	1
Infant deaths.....	17	16	-	-	-	-	-	-	-	1
Infant Mortality Rate.....	*	*	-	-	-	-	-	-	-	*
1,000-1,249 grams										
Live births.....	101	31	56	8	3	2	-	-	1	-
Infant deaths.....	8	3	3	-	1	1	-	-	-	-
Infant Mortality Rate.....	*	*	*	-	*	*	-	-	-	-
1,250-1,499 grams										
Live births.....	131	5	86	26	9	5	-	-	-	-
Infant deaths.....	10	1	7	-	1	1	-	-	-	-
Infant Mortality Rate.....	*	*	*	-	*	*	-	-	-	-
1,500-1,999 grams										
Live births.....	483	2	118	147	165	43	3	-	-	5
Infant deaths.....	17	-	7	2	6	1	-	-	-	1
Infant Mortality Rate.....	*	-	*	*	*	*	-	-	-	*
2,000-2,499 grams										
Live births.....	1,523	-	23	164	737	551	33	9	1	5
Infant deaths.....	16	-	-	3	6	7	-	-	-	-
Infant Mortality Rate.....	*	-	-	*	*	*	-	-	-	-
2,500 grams or more										
Live births.....	28,987	2	11	39	1,726	19,259	5,976	1,818	114	42
Infant deaths.....	149	-	-	5	14	95	20	12	2	1
Infant Mortality Rate.....	5.14	-	-	*	*	4.93	3.35	*	*	*
Not Stated										
Live births.....	14	2	2	2	1	1	2	-	-	4
Infant deaths.....	-	-	-	-	-	-	-	-	-	-
Infant Mortality Rate.....	-	-	-	-	-	-	-	-	-	-
Non-Hispanic Asian										
Total										
Live births.....	254,471	1,139	1,890	2,391	16,532	167,304	51,497	13,148	436	134
Infant deaths.....	925	488	55	37	67	204	45	16	4	8
Infant Mortality Rate.....	3.63	428.45	29.10	15.47	4.05	1.22	0.87 *	*	*	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2016 period data -Con.

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
Less than 2,500 grams										
Live births.....	21,484	1,129	1,833	2,242	8,072	7,776	369	52	4	7
Infant deaths.....	674	488	55	34	43	46	3	2	1	1
Infant Mortality Rate.....	31.37	432.24	30.01	15.17	5.33	5.92	*	*	*	*
Less than 500 grams										
Live births.....	279	275	2	-	-	-	-	-	-	2
Infant deaths.....	244	241	2	-	-	-	-	-	-	1
Infant Mortality Rate.....	874.55	876.36	*	-	-	-	-	-	-	*
500-749 grams										
Live births.....	449	401	46	1	1	-	-	-	-	-
Infant deaths.....	201	198	3	-	-	-	-	-	-	-
Infant Mortality Rate.....	447.66	493.77	*	-	-	-	-	-	-	-
750-999 grams										
Live births.....	485	294	170	14	2	4	1	-	-	-
Infant deaths.....	46	39	5	2	-	-	-	-	-	-
Infant Mortality Rate.....	94.85	132.65 *	*	-	-	-	-	-	-	-
1,000-1,249 grams										
Live births.....	691	132	455	78	21	4	1	-	-	-
Infant deaths.....	19	8	10	-	-	1	-	-	-	-
Infant Mortality Rate.....	*	*	*	-	-	*	-	-	-	-
1,250-1,499 grams										
Live births.....	919	15	551	218	114	18	3	-	-	-
Infant deaths.....	32	-	19	6	4	3	-	-	-	-
Infant Mortality Rate.....	34.82	-	*	*	*	*	-	-	-	-
1,500-1,999 grams										
Live births.....	3,822	9	549	1,182	1,678	381	20	1	1	1
Infant deaths.....	58	1	12	17	18	9	-	-	1	-
Infant Mortality Rate.....	15.18	*	*	*	*	*	-	-	*	-
2,000-2,499 grams										
Live births.....	14,839	3	60	749	6,256	7,369	344	51	3	4
Infant deaths.....	73	1	4	9	21	33	3	2	-	-
Infant Mortality Rate.....	4.92	*	*	*	3.36	4.48	*	*	-	-
2,500 grams or more										
Live births.....	232,799	6	54	148	8,446	159,459	51,094	13,086	432	74
Infant deaths.....	244	-	-	3	24	158	42	14	3	-
Infant Mortality Rate.....	1.05	-	-	*	2.84	0.99	0.82	*	*	-

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2016 period data -Con.
 [Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
Not Stated										
Live births.....	188	4	3	1	14	69	34	10	-	53
Infant deaths.....	7	-	-	-	-	-	-	-	-	7
Infant Mortality Rate.....	*	-	-	-	-	-	-	-	-	*
Non-Hispanic Native Hawaiian or Other Pacific Islander										
Total										
Live births.....	9,342	67	103	121	784	5,739	1,893	584	37	14
Infant deaths.....	69	24	5	5	8	20	5	1	-	1
Infant Mortality Rate.....	7.39	358.21	*	*	*	3.48	*	*	-	*
Less than 2,500 grams										
Live births.....	718	66	99	100	265	176	8	2	-	2
Infant deaths.....	38	24	5	5	2	2	-	-	-	-
Infant Mortality Rate.....	52.92	363.64	*	*	*	*	-	-	-	-
Less than 500 grams										
Live births.....	12	11	1	-	-	-	-	-	-	-
Infant deaths.....	11	10	1	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	-	-	-	-	-	-	-
500-749 grams										
Live births.....	22	19	3	-	-	-	-	-	-	-
Infant deaths.....	10	9	1	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	-	-	-	-	-	-	-
750-999 grams										
Live births.....	33	23	10	-	-	-	-	-	-	-
Infant deaths.....	5	4	1	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	-	-	-	-	-	-	-
1,000-1,249 grams										
Live births.....	38	11	21	2	2	1	-	-	-	1
Infant deaths.....	2	1	1	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	-	-	-	-	-	-	-
1,250-1,499 grams										
Live births.....	34	1	20	10	3	-	-	-	-	-
Infant deaths.....	1	-	1	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	-	*	-	-	-	-	-	-	-
1,500-1,999 grams										
Live births.....	149	1	35	52	53	6	1	-	-	1
Infant deaths.....	5	-	-	4	1	-	-	-	-	-
Infant Mortality Rate.....	*	-	-	*	*	-	-	-	-	-

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2016 period data -Con.

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
2,000-2,499 grams										
Live births.....	430	-	9	36	207	169	7	2	-	-
Infant deaths.....	4	-	-	1	1	2	-	-	-	-
Infant Mortality Rate.....	*	-	-	*	*	*	-	-	-	-
2,500 grams or more										
Live births.....	8,619	-	4	20	519	5,562	1,885	582	37	10
Infant deaths.....	30	-	-	-	6	18	5	1	-	-
Infant Mortality Rate.....	3.48	-	-	-	*	*	*	*	-	-
Not Stated										
Live births.....	5	1	-	1	-	1	-	-	-	2
Infant deaths.....	1	-	-	-	-	-	-	-	-	1
Infant Mortality Rate.....	*	-	-	-	-	-	-	-	-	*
Hispanic										
Live births.....	918,447	5,649	7,665	9,881	63,496	592,481	186,469	49,833	2,297	676
Infant deaths.....	4,555	2,065	352	218	471	1,106	240	49	15	39
Infant Mortality Rate.....	4.96	365.55	45.92	22.06	7.42	1.87	1.29	0.98	*	57.69
Less than 2,500 grams										
Live births.....	67,346	5,604	7,384	8,900	25,037	19,078	1,062	162	32	87
Infant deaths.....	3,166	2,063	346	187	294	232	21	6	2	14
Infant Mortality Rate.....	47.01	368.13	46.86	21.01	11.74	12.16	19.77	*	*	*
Less than 500 grams										
Live births.....	1,289	1,240	21	3	2	-	-	-	-	23
Infant deaths.....	1,072	1,054	10	1	-	-	-	-	-	7
Infant Mortality Rate.....	831.65	850.00	*	*	-	-	-	-	-	*
500-749 grams										
Live births.....	2,051	1,891	141	2	3	1	-	1	-	12
Infant deaths.....	748	719	25	-	-	-	-	-	-	4
Infant Mortality Rate.....	364.70	380.22	177.30	-	-	-	-	-	-	*
750-999 grams										
Live births.....	2,204	1,557	563	43	17	13	6	2	1	2
Infant deaths.....	271	212	46	7	3	2	-	-	-	1
Infant Mortality Rate.....	122.96	136.16	81.71	*	*	*	-	-	-	*
1,000-1,249 grams										
Live births.....	2,721	750	1,604	232	78	46	7	1	-	3
Infant deaths.....	165	53	83	16	9	3	-	-	-	1
Infant Mortality Rate.....	60.64	70.67	51.75	*	*	*	-	-	-	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2016 period data -Con.

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
1,250-1,499 grams										
Live births.....	3,245	110	1,997	748	280	94	10	2	2	2
Infant deaths.....	140	15	77	18	22	8	-	-	-	-
Infant Mortality Rate.....	43.14	*	38.56	*	78.57	*	-	-	-	-
1,500-1,999 grams										
Live births.....	12,910	33	2,684	4,367	4,690	1,042	62	12	8	12
Infant deaths.....	339	5	76	87	105	60	3	1	1	1
Infant Mortality Rate.....	26.26	*	28.32	19.92	22.39	57.58	*	*	*	*
2,000-2,499 grams										
Live births.....	42,926	23	374	3,505	19,967	17,882	977	144	21	33
Infant deaths.....	429	5	28	58	154	159	18	5	1	-
Infant Mortality Rate.....	9.99	*	74.87	16.55	7.71	8.89	*	*	*	-
2,500 grams or more										
Live births.....	850,690	28	270	974	38,439	573,265	185,359	49,659	2,262	434
Infant deaths.....	1,371	2	6	30	177	874	219	43	13	6
Infant Mortality Rate.....	1.61	*	*	30.80	4.60	1.52	1.18	0.87	*	*
Not Stated										
Live births.....	411	17	11	7	20	138	48	12	3	155
Infant deaths.....	18	-	-	-	-	-	-	-	-	18
Infant Mortality Rate.....	*	-	-	-	-	-	-	-	-	*

-/ Quality Zero

*/ Figure does not meet standard of reliability or precision: based on fewer than 20 deaths in the numerator

1/ Includes Aleuts and Eskimos

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2016 period data
 [Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births.]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
All Races						
Total (all birthweights)	3,945,875	23,157	15,303	12,354	2,949	7,854
Rate		5.87	3.88	3.13	0.75	1.99
Less than 2,500 grams	322,726	15,456	12,534	10,630	1,904	2,922
Rate		47.89	38.84	32.94	5.90	9.05
Less than 500 grams	6,434	5,473	5,318	5,122	196	155
Rate		850.64	826.55	796.08	30.46	24.09
500-749 grams	9,650	3,695	3,116	2,466	650	579
Rate		382.90	322.90	255.54	67.36	60.00
750-999 grams	10,792	1,330	1,031	701	330	299
Rate		123.24	95.53	64.96	30.58	27.71
1,000-1,249 grams	13,044	714	530	376	154	183
Rate		54.74	40.63	28.83	11.81	14.03
1,250-1,499 grams	16,043	666	462	375	87	204
Rate		41.51	28.80	23.37	5.42	12.72
1,500-1,749 grams	24,083	759	514	418	96	245
Rate		31.52	21.34	17.36	3.99	10.17
1,750-1,999 grams	38,797	855	556	446	110	299
Rate		22.04	14.33	11.50	2.84	7.71
2,000-2,499 grams	203,883	1,965	1,007	727	280	959
Rate		9.64	4.94	3.57	1.37	4.70
2,500 grams or more	3,619,575	7,549	2,630	1,587	1,043	4,919
Rate		2.09	0.73	0.44	0.29	1.36
Not Stated	3,574	152	138	136	2	13
Rate		42.53	38.61	38.05	*	*
Non-Hispanic White						
Total (all birthweights)	2,056,332	9,974	6,355	5,044	1,311	3,619
Rate		4.85	3.09	2.45	0.64	1.76

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2016 period data -Con.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
Less than 2,500 grams	143,566	6,097	4,896	4,135	761	1,201
Rate		42.47	34.10	28.80	5.30	8.37
Less than 500 grams	2,119	1,835	1,790	1,724	66	45
Rate		865.97	844.74	813.59	31.15	21.24
500-749 grams	3,364	1,400	1,193	952	241	208
Rate		416.17	354.64	283.00	71.64	61.83
750-999 grams	4,255	567	449	307	142	117
Rate		133.25	105.52	72.15	33.37	27.50
1,000-1,249 grams	5,527	322	248	187	61	73
Rate		58.26	44.87	33.83	11.04	13.21
1,250-1,499 grams	7,007	307	225	188	37	82
Rate		43.81	32.11	26.83	5.28	11.70
1,500-1,749 grams	10,903	359	247	207	40	111
Rate		32.93	22.65	18.99	3.67	10.18
1,750-1,999 grams	17,686	416	280	232	48	136
Rate		23.52	15.83	13.12	2.71	7.69
2,000-2,499 grams	92,705	891	464	339	125	427
Rate		9.61	5.01	3.66	1.35	4.61
2,500 grams or more	1,910,901	3,818	1,405	856	549	2,413
Rate		2.00	0.74	0.45	0.29	1.26
Not Stated	1865	59	54	53	1	5
Rate		31.64	28.95	28.42	*	*
Non-Hispanic Black Total (all birthweights)	558,622	6,354	4,214	3,411	803	2,140
Rate		11.37	7.54	6.11	1.44	3.83
Less than 2,500 grams	76,624	4,673	3,712	3,106	606	960
Rate		60.99	48.44	40.54	7.91	12.53
Less than 500 grams	2,372	1,985	1,912	1,829	83	73
Rate		836.85	806.07	771.08	34.99	30.78

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2016 period data -Con.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
500-749 grams	3,315	1,147	931	708	223	215
Rate		346.00	280.84	213.57	67.27	64.86
750-999 grams	3,389	370	259	166	93	110
Rate		109.18	76.42	48.98	27.44	32.46
1,000-1,249 grams	3,522	176	113	64	49	62
Rate		49.97	32.08	18.17	13.91	17.60
1,250-1,499 grams	4,185	157	84	60	24	72
Rate		37.51	20.07	14.34	5.73	17.20
1,500-1,749 grams	5,802	177	98	69	29	78
Rate		30.51	16.89	11.89	5.00	13.44
1,750-1,999 grams	9,087	186	106	78	28	79
Rate		20.47	11.67	8.58	3.08	8.69
2,000-2,499 grams	44,952	477	207	131	76	270
Rate		10.61	4.60	2.91	1.69	6.01
2,500 grams or more	481,398	1,633	457	261	196	1,176
Rate		3.39	0.95	0.54	0.41	2.44
Not Stated	600	48	44	44	-	4
Rate		80.00	73.33	73.33	-	*
Non-Hispanic American Indian or Alaskan Native						
Total (all birthweights)	31,452	297	160	127	33	136
Rate		9.44	5.09	4.04	1.05	4.32
Less than 2,500 grams	2,451	147	120	104	16	27
Rate		59.98	48.96	42.43	*	11.02
Less than 500 grams	45	41	40	40	-	1
Rate		911.11	888.89	888.89	-	*
500-749 grams	90	38	35	29	6	3
Rate		422.22	388.89	322.22	*	*
750-999 grams	78	17	15	12	3	2
Rate		*	*	*	*	*

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2016 period data -Con.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
1,000-1,249 grams	101	8	6	6	-	2
Rate		*	*	*	-	*
1,250-1,499 grams	131	10	7	4	3	3
Rate		*	*	*	*	*
1,500-1,749 grams	196	9	6	4	2	3
Rate		*	*	*	*	*
1,750-1,999 grams	287	8	6	4	2	2
Rate		*	*	*	*	*
2,000-2,499 grams	1,523	16	5	5	-	11
Rate		*	*	*	-	*
2,500 grams or more	28,987	149	40	23	17	109
Rate		5.14	1.38	0.79	*	3.76
Not Stated	14	-	-	-	-	-
Rate		-	-	-	-	-
Non-Hispanic Asian						
Total (all birthweights)	254,471	925	678	570	108	247
Rate		3.63	2.66	2.24	0.42	0.97
Less than 2,500 grams	21,484	674	578	505	73	96
Rate		31.37	26.90	23.51	3.40	4.47
Less than 500 grams	279	244	239	231	8	5
Rate		874.55	856.63	827.96	*	*
500-749 grams	449	201	168	142	26	33
Rate		447.66	374.16	316.26	57.91	73.50
750-999 grams	485	46	37	22	15	9
Rate		94.85	76.29	45.36	*	*
1,000-1,249 grams	691	19	16	12	4	3
Rate		*	*	*	*	*
1,250-1,499 grams	919	32	26	22	4	6
Rate		34.82	28.29	23.94	*	*

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2016 period data -Con.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
1,500-1,749 grams	1,352	25	21	17	4	4
Rate		18.49	15.53	*	*	*
1,750-1,999 grams	2,470	33	21	16	5	12
Rate		13.36	8.50	*	*	*
2,000-2,499 grams	14,839	73	49	42	7	24
Rate		4.92	3.30	2.83	*	1.62
2,500 grams or more	232,799	244	94	59	35	149
Rate		1.05	0.40	0.25	0.15	0.64
Not Stated	188	7	6	6	-	1
Rate		*	*	*	-	*
Non-Hispanic Native Hawaiian or Other Pacific Islander						
Total (all birthweights)	9342	69	42	32	10	27
Rate		4.07	2.89	2.35	*	1.18
Less than 2,500 grams	718	38	27	22	5	11
Rate		15.32	15.32	15.32	*	*
Less than 500 grams	12	11	11	11	-	-
Rate		*	*	*	-	-
500-749 grams	22	10	9	6	3	1
Rate		*	*	*	*	*
750-999 grams	33	5	2	1	1	3
Rate		*	*	*	*	*
1,000-1,249 grams	38	2	1	-	1	1
Rate		*	*	-	*	*
1,250-1,499 grams	34	1	1	1	-	-
Rate		*	*	*	-	-
1,500-1,749 grams	59	1	-	-	-	1
Rate		*	-	-	-	*
1,750-1,999 grams	90	4	2	2	-	2
Rate		*	*	*	-	*

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2016 period data -Con.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
2,000-2,499 grams	430	4	1	1	-	3
Rate		*	*	*	-	*
2,500 grams or more	8619	30	14	9	5	16
Rate		3.48	*	*	*	*
Not Stated	5	1	1	1	-	-
Rate		*	*	*	-	-
Hispanic						
Total (all birthweights)	918,447	4,555	3,170	2,584	586	1,384
Rate		4.96	3.45	2.81	0.64	1.51
Less than 2,500 grams	67,346	3,166	2,625	2,245	380	541
Rate		47.01	38.98	33.34	5.64	8.03
Less than 500 grams	1,289	1,072	1,044	1,010	34	28
Rate		831.65	809.93	783.55	26.38	21.72
500-749 grams	2,051	748	643	515	128	104
Rate		364.70	313.51	251.10	62.41	50.71
750-999 grams	2,204	271	222	155	67	49
Rate		122.96	100.73	70.33	30.40	22.23
1,000-1,249 grams	2,721	165	126	93	33	39
Rate		60.64	46.31	34.18	12.13	14.33
1,250-1,499 grams	3,245	140	106	89	17	34
Rate		43.14	32.67	27.43	*	10.48
1,500-1,749 grams	5,016	165	124	107	17	40
Rate		32.89	24.72	21.33	*	7.97
1,750-1,999 grams	7,894	175	117	95	22	57
Rate		22.17	14.82	12.03	2.79	7.22
2,000-2,499 grams	42,926	429	241	180	61	189
Rate		9.99	5.61	4.19	1.42	4.40
2,500 grams or more	850,690	1,371	528	322	206	844
Rate		1.61	0.62	0.38	0.24	0.99
Not Stated	411	18	18	18	-	-
Rate		*	*	*	-	-

* Figure does not meet standard of reliability or precision: based on fewer than 20 deaths in the numerator

- Quantity zero

Documentation Table 5. Infant deaths and infant mortality rates by age of death and birthweight for 10 major causes of infant death: United States, 2016 period data

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 100,000 live births]

Cause of death and birthweight	Total					
	Live Births	Infant Deaths	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
All birthweights						
All Causes	3,945,875	23,157	15,303	12,354	2,949	7,854
		586.9	387.8	313.1	74.7	199.0
Congenital malformations (Q00-Q99).....		4,823	3,410	2,689	721	1,413
		122.2	86.4	68.1	18.3	35.8
Short gestation and low birthweight nec (P07).....		3,926	3,854	3,740	114	72
		99.5	97.7	94.8	2.9	1.8
Maternal complications of pregnancy (P01).....		1,407	1,394	1,381	13	13
		35.7	35.3	35.0	-	-
Sudden infant death syndrome (R95).....		1,498	120	23	97	1,377
		38.0	3.0	0.6	2.5	34.9
Accidents (unintentional injures) (V01-X59).....		1,217	136	31	105	1,080
		30.8	3.4	0.8	2.7	27.4
Complications of placenta, cord, membranes (P02).....		839	827	790	37	12
		21.3	21.0	20.0	0.9	*
Bacterial sepsis of newborn (P36).....		584	554	249	306	29
		14.8	14	6.3	7.8	0.7
Respiratory distress of newborn (P22).....		491	482	380	102	9
		12.4	12.2	9.6	2.6	*
Diseases of the circulatory system (I00-I99).....		459	98	55	43	361
		11.6	2.5	1.4	1.1	9.1
Neonatal hemorrhage (P50-P52, P54).....		400	393	276	117	7
		10.1	10.0	7.0	3.0	*
All other causes.....		7,512	4,032	2,739	1,293	3,480
		190.4	102.2	69.4	32.8	88.2
Less than 2,500 grams						
All Causes	322,726	15,456	12,534	10,630	1,904	2,922
		4789.2	3883.8	3293.8	590	905.4
Congenital malformations (Q00-Q99).....		2,948	2,295	1,935	360	654
		913.5	711.1	599.6	111.5	202.6
Short gestation and low birthweight nec (P07).....		3,824	3,753	3,639	114	71
		1184.9	1162.9	1127.6	35.3	22
Maternal complications of pregnancy (P01).....		1370	1,358	1345	13	12
		424.5	420.8	416.8	*	*
Sudden infant death syndrome (R95).....		314	26	4	22	288
		97.3	8.1	*	6.8	89.2
Accidents (unintentional injures) (V01-X59).....		205	22	8	14	183
		63.5	6.8	*	*	56.7
Complications of placenta, cord, membranes (P02).....		744	737	709	28	7
		230.5	228.4	219.7	8.7	*
Bacterial sepsis of newborn (P36).....		515	491	216	276	24
		159.6	152.1	66.9	85.5	7.4

Documentation Table 5. Infant deaths and infant mortality rates by age of death and birthweight for 10 major causes of infant death: [Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 100,000 live births]

Cause of death and birthweight	Total					
	Live Births	Infant Deaths	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
Respiratory distress of newborn (P22).....		480	471	371	100	9
		148.7	145.9	115	31	*
Diseases of the circulatory system (I00-I99).....		221	41	28	13	179
		68.5	12.7	8.7	*	55.5
Neonatal hemorrhage (P50-P52, P54).....		367	363	257	106	4
		113.7	112.5	79.6	32.8	*
All other causes.....		4,469	2,977	2,119	858	1,491
		1384.8	922.5	656.6	265.9	462.0
2,500 grams or more						
All Causes	3,619,575	7,549	2,630	1,587	1,043	4,919
		208.6	72.7	43.8	28.8	135.9
Congenital malformations (Q00-Q99).....		1,868	1,109	749	360	759
		51.6	30.6	20.7	9.9	21
Short gestation and low birthweight nec (P07).....		15	14	14	-	1
		*	*	*	-	*
Maternal complications of pregnancy (P01).....		18	17	17	-	1
		*	*	*	-	*
Sudden infant death syndrome (R95).....		1,181	94	19	75	1,087
		32.6	2.6	*	2.1	30.0
Accidents (unintentional injuries) (V01-X59).....		1010	113	22	91	897
		27.9	3.1	0.6	2.5	24.8
Complications of placenta, cord, membranes (P02).....		87	82	73	9	5
		2.4	2.3	2.0	*	*
Bacterial sepsis of newborn (P36).....		67	62	32	30	5
		1.9	1.7	0.9	0.8	*
Respiratory distress of newborn (P22).....		10	10	8	2	-
		*	*	*	*	-
Diseases of the circulatory system (I00-I99).....		237	57	27	30	180
		6.5	1.6	0.7	0.8	5
Neonatal hemorrhage (P50-P52, P54).....		33	30	19	11	3
		0.9	0.8	*	*	*
All other causes.....		3,022	1,040	606	434	1,982
		83.5	28.7	16.7	12	54.8
Not stated birthweight						
All Causes	3,574	152	138	136	2	13
		4252.9	3861.2	3805.3	*	*
Congenital malformations (Q00-Q99).....		7	7	6	1	-
		*	*	*	*	-
Short gestation and low birthweight nec (P07).....		86	86	86	-	-
		2406.3	2406.3	2406.3	-	-
Maternal complications of pregnancy (P01).....		19	19	19	-	-
		*	*	*	-	-
Sudden infant death syndrome (R95).....		3	-	-	-	3
		*	-	-	-	*
Accidents (unintentional injuries) (V01-X59).....		2	1	1	-	1
		*	*	*	-	*
Complications of placenta, cord, membranes (P02).....		8	8	8	-	-
		*	*	*	-	-
Bacterial sepsis of newborn (P36).....		1	1	1	-	-
		*	*	*	-	-
Respiratory distress of newborn (P22).....		1	1	1	-	-
		*	*	*	-	-

Documentation Table 5. Infant deaths and infant mortality rates by age of death and birthweight for 10 major causes of infant death:
 [Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 100,000 live births]

Cause of death and birthweight	Total					
	Live Births	Infant Deaths	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
Diseases of the circulatory system (I00-I99).....		2	-	-	-	2
		*	-	-	-	*
Neonatal hemorrhage (P50-P52, P54).....		-	-	-	-	-
		-	-	-	-	-
All other causes.....		22	15	14	1	7
		615.6	*	*	*	*

*/Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator.

- / Quantity zero.

Table 1. Infant mortality rates, live births, and infant deaths by selected characteristics and Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: United States, 2016 linked file

Characteristics	All origins ¹	Non-Hispanic					Hispanic				
		White	Black	American Indian or Alaska Native ²	Asian	Native Hawaiian or Other Pacific Islander	Total	Mexican	Puerto Rican	Cuban	Central and South American
Total	5.87	4.85	11.37	9.44	3.63	7.39	4.96	4.96	6.13	3.77	4.35
Infant mortality rates per 1,000 live births in specified group											
Age at death											
Total neonatal	3.88	3.09	7.54	5.09	2.66	4.50	3.45	3.39	4.45	2.61	3.14
Early neonatal (< 7 days)	3.13	2.45	6.11	4.04	2.24	3.43	2.81	2.76	3.70	2.17	2.54
Late neonatal (7-27 days)	0.75	0.64	1.44	1.05	0.42	*	0.64	0.63	0.75	*	0.60
Postneonatal	1.99	1.76	3.83	4.32	0.97	2.89	1.51	1.57	1.67	1.15	1.20
Sex											
Male	6.38	5.29	12.40	10.70	4.05	7.95	5.36	5.36	6.70	3.95	4.68
Female	5.34	4.39	10.32	8.09	3.19	6.80	4.54	4.54	5.53	3.57	4.00
Plurality											
Single births	5.22	4.30	10.08	8.67	3.15	6.48	4.50	4.54	5.45	3.21	3.86
Twin births	23.02	18.06	40.19	34.91	17.61	*	21.52	21.61	23.83	*	22.89
Triplet and higher order births	60.45	53.16	89.17	*	*	*	66.91	*	*	*	*
Birthweight											
Less than 2,500 grams	47.89	42.47	60.99	59.98	31.37	52.92	47.01	48.33	49.18	38.99	43.82
Less than 1,500 grams	212.23	198.95	228.45	256.18	191.99	208.63	208.25	209.38	221.77	187.73	204.63
1,500-2,499 grams	13.42	13.74	14.02	16.45	7.07	*	13.77	15.39	10.05	*	12.97
2,500 grams or more	2.09	2.00	3.39	5.14	1.05	3.48	1.61	1.72	1.60	1.00	1.32
Period of gestation											
Less than 32 weeks	190.15	173.62	215.62	211.68	179.27	170.59	181.54	179.17	202.17	174.05	176.72
32-33 weeks	20.12	19.63	19.42	*	15.47	*	22.06	23.16	*	*	18.93
34-36 weeks	8.65	8.77	11.13	10.60	4.05	*	7.42	8.29	5.31	*	6.59
37-41 weeks	2.19	2.07	3.62	4.83	1.14	3.28	1.73	1.85	1.69	*	1.48
37-38 weeks	3.26	3.17	4.90	5.36	1.68	*	2.60	2.76	1.90	*	2.58
39-40 weeks	1.72	1.63	2.92	4.55	0.88	*	1.32	1.43	1.59	*	0.97
41 weeks	1.49	1.35	2.52	*	*	-	0.98	1.01	*	*	*
42 weeks or more	4.31	2.49	*	*	*	*	*	*	*	*	*
Age of mother											
Under 20 years	8.69	8.39	12.86	13.04	11.21	*	6.29	6.20	8.38	*	4.90
20-24 years	7.13	6.27	12.22	8.67	5.00	*	4.87	4.72	6.23	*	4.66
25-29 years	5.58	4.67	10.75	9.23	3.34	*	4.64	4.72	5.56	2.92	3.95
30-34 years	4.87	4.00	10.41	9.74	3.30	*	4.55	4.39	6.56	3.72	3.97
35-39 years	5.26	4.18	11.10	7.50	3.52	*	5.19	5.63	4.03	*	4.71
40-54 years	7.26	5.80	13.71	*	5.13	*	7.09	7.05	*	*	5.48
Marital status											
Married	4.45	3.88	9.46	8.17	3.40	6.97	4.50	4.54	5.23	3.27	3.91
Unmarried	8.02	7.28	12.20	10.04	5.33	7.85	5.37	5.35	6.64	4.24	4.77
Mother's place of birth											
Born in the 50 States and D.C.	6.20	4.92	12.03	9.46	4.71	6.10	5.31	5.17	6.03	4.53	5.06
Born elsewhere	4.48	3.54	7.53	*	3.38	7.99	4.55	4.67	6.35	3.04	4.21

See footnotes at end of table.

Table 1. Infant mortality rates, live births, and infant deaths by selected characteristics and Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: United States, 2016 linked file--Con.

Characteristics	All origins ¹	Non-Hispanic					Hispanic				
		White	Black	American Indian or Alaska Native ²	Asian	Native Hawaiian or Other Pacific Islander	Total	Mexican	Puerto Rican	Cuban	Central and South American
Total	3,945,875	2,056,332	558,622	31,452	254,471	9,342	918,447	535,993	70,517	22,573	143,983
Sex											
Male	2,018,183	1,054,533	282,923	15,882	131,568	4,780	468,504	272,997	35,965	11,643	73,487
Female	1,927,692	1,001,799	275,699	15,570	122,903	4,562	449,943	262,996	34,552	10,930	70,496
Plurality											
Single births	3,810,149	1,980,405	535,727	30,560	246,503	9,111	895,284	523,638	68,209	21,777	140,305
Twin births	131,723	73,425	22,267	888	7,779	228	22,625	12,030	2,266	780	3,583
Triplet and higher order births	4,003	2,502	628	4	189	3	538	325	42	16	95
Birthweight											
Less than 2,500 grams	322,726	143,566	76,624	2,451	21,484	718	67,346	37,034	6,710	1,616	10,200
Less than 1,500 grams	55,963	22,272	16,783	445	2,823	139	11,510	6,290	1,240	277	1,642
1,500-2,499 grams	266,763	121,294	59,841	2,006	18,661	579	55,836	30,744	5,470	1,339	8,558
2,500 grams or more	3,619,575	1,910,901	481,398	28,987	232,799	8,619	850,690	498,697	63,779	20,948	133,711
Not stated	3,574	1,865	600	14	188	5	411	262	28	9	72
Period of gestation											
Less than 32 weeks	62,857	25,867	17,716	548	3,029	170	13,314	7,373	1,385	316	1,907
32-33 weeks	45,979	21,956	9,785	388	2,391	121	9,881	5,484	943	246	1,532
34-36 weeks	279,382	138,031	49,333	2,641	16,532	784	63,496	36,205	5,458	1,578	9,713
37-41 weeks	3,288,623	1,710,718	451,476	25,875	218,801	7,632	778,950	456,378	58,582	19,437	121,765
37-38 weeks	1,004,224	485,846	158,937	8,954	70,990	2,559	247,999	144,694	18,943	5,686	38,412
39-40 weeks	2,284,399	1,224,872	292,539	16,921	147,811	5,073	530,951	311,684	39,639	13,751	83,353
41 weeks	251,667	149,525	28,154	1,827	13,148	584	49,833	28,690	3,951	961	8,574
42 weeks or more	13,913	8,826	1,652	116	436	37	2,297	1,440	129	26	403
Not stated	3,454	1,409	506	57	134	14	676	423	69	9	89
Age of mother											
Under 20 years	212,062	78,641	43,531	3,145	1,962	560	75,708	46,439	6,202	787	8,776
20-24 years	803,978	364,824	154,406	9,116	17,598	2,353	228,216	137,996	20,382	4,107	26,409
25-29 years	1,149,122	616,812	163,887	9,529	66,487	2,840	258,025	150,102	20,665	7,196	38,223
30-34 years	1,111,042	643,398	118,795	6,266	100,491	2,279	210,735	119,910	14,168	6,712	39,013
35-39 years	547,488	294,521	62,252	2,801	54,861	1,027	115,848	64,662	7,436	2,994	24,815
40-54 years	122,183	58,136	15,751	595	13,072	283	29,915	16,884	1,664	777	6,747
Marital status											
Married	2,376,079	1,471,273	168,842	10,034	223,897	4,881	434,920	261,621	25,644	11,022	71,065
Unmarried	1,569,796	585,059	389,780	21,418	30,574	4,461	483,527	274,372	44,873	11,551	72,918
Mother's place of birth											
Born in the 50 States and D.C	3,027,259	1,917,741	464,313	31,078	43,958	3,444	468,236	284,052	50,387	10,378	23,898
Born elsewhere	910,462	136,024	92,053	330	209,663	5,758	449,140	251,525	19,837	12,182	119,977
Not stated	8,154	2,567	2,256	44	850	140	1,071	416	293	13	108

See footnotes at end of table.

Table 1. Infant mortality rates, live births, and infant deaths by selected characteristics and Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: United States, 2016 linked file--Con.

Characteristics	All origins ¹	Non-Hispanic					Hispanic				
		White	Black	American Indian or Alaska Native ²	Asian	Native Hawaiian or Other Pacific Islander	Total	Mexican	Puerto Rican	Cuban	Central and South American
Total	23,157	9,974	6,354	297	925	69	4,555	2,657	432	85	626
Infant deaths											
Age at death											
Total neonatal	15,303	6,355	4,213	160	678	42	3,170	1,816	314	59	452
Early neonatal (< 7 days)	12,354	5,044	3,411	127	570	32	2,584	1,479	261	49	366
Late neonatal (7-27 days)	2,949	1,311	802	33	108	10	586	337	53	10	86
Postneonatal	7,854	3,619	2,140	136	247	27	1,384	841	118	26	173
Sex											
Male	12,871	5,577	3,508	170	533	38	2,512	1,462	241	46	344
Female	10,286	4,397	2,845	126	392	31	2,043	1,195	191	39	282
Plurality											
Single births	19,883	8,515	5,402	265	777	59	4,032	2,377	372	70	541
Twin births	3,032	1,326	895	31	137	10	487	260	54	14	82
Triplet and higher order births	242	133	56	1	11	-	36	19	6	1	3
Birthweight											
Less than 2,500 grams	15,456	6,097	4,673	147	674	38	3,166	1,790	330	63	447
Less than 1,500 grams	11,877	4,431	3,834	114	542	29	2,397	1,317	275	52	336
1,500-2,499 grams	3,579	1,666	839	33	132	9	769	473	55	11	111
2,500 grams or more	7,549	3,818	1,633	149	244	30	1,371	859	102	21	177
Not stated	152	59	48	-	7	1	18	9	-	1	3
Period of gestation											
Less than 32 weeks	11,952	4,491	3,820	116	543	29	2,417	1,321	280	55	337
32-33 weeks	925	431	190	10	37	5	218	127	18	2	29
34-36 weeks	2,416	1,210	549	28	67	8	471	300	29	7	64
37-41 weeks	7,198	3,537	1,633	125	249	25	1,346	845	99	19	180
37-38 weeks	3,278	1,540	779	48	119	10	644	400	36	8	99
39-40 weeks	3,920	1,997	854	77	130	15	702	445	63	11	81
41 weeks	375	202	71	12	16	1	49	29	5	1	8
42 weeks or more	60	22	15	2	4	-	15	12	1	-	2
Not stated	232	80	76	3	8	1	39	22	-	1	5
Age of mother											
Under 20 years	1,842	660	560	41	22	5	476	288	52	6	43
20-24 years	5,733	2,289	1,887	79	88	19	1,112	651	127	17	123
25-29 years	6,407	2,883	1,762	88	222	17	1,196	709	115	21	151
30-34 years	5,408	2,575	1,237	61	332	15	959	526	93	25	155
35-39 years	2,879	1,230	691	21	193	10	601	364	30	11	117
40-54 years	887	337	216	6	67	3	212	119	14	5	37
Marital status											
Married	10,564	5,715	1,598	82	762	34	1,958	1,188	134	36	278
Unmarried	12,593	4,259	4,755	215	163	35	2,596	1,469	298	49	348
Mother's place of birth											
Born in the 50 States and D.C.	18,779	9,436	5,585	294	207	21	2,484	1,468	304	47	121
Born elsewhere	4,080	481	693	2	709	46	2,043	1,175	126	37	505
Not stated	299	57	75	1	9	2	27	14	2	1	-

* Figure does not meet standards of reliability or precision; based on fewer than 20 deaths in the numerator.

- Quantity zero.

1 Includes other and unknown Hispanic origin not stated, not shown separately.

2 Includes Aleuts and Eskimos.

NOTES: Infant deaths are weighted so numbers may not exactly add to totals due to rounding. Not stated responses were included in totals but not distributed among groups for rate computations. Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1997 Office of Management and Budget standards. Persons of Hispanic origin may be of any race. In this table Hispanic women are classified only by place of origin; non-Hispanic women are classified by race.

Table 2. Infant mortality rates by race and Hispanic origin of mother: United States and each State, 2014-2016 linked files

[By place of residence]

	Race and Hispanic origin of mother						Ratio of rate, non-Hispanic black and non- Hispanic white
	Total	Non- Hispanic White	Non- Hispanic Black	American Indian or Alaska Native ¹	Asian Pacific Islander	Hispanic	
	Infant mortality rates per 1,000 live births in specified group						
United States	5.86	4.89	11.13	8.13	4.00	4.97	2.3
Alabama	8.67	6.20	14.23	*	*	6.59	2.3
Alaska	6.26	4.27	*	12.35	*	*	*
Arizona	5.64	4.87	9.96	8.57	5.49	5.51	2.0
Arkansas	7.74	7.16	11.65	*	6.81	4.53	1.6
California	4.32	3.54	9.10	6.03	3.38	4.29	2.6
Colorado	4.73	4.07	9.88	*	5.02	4.81	2.4
Connecticut	5.08	3.22	10.68	*	5.10	6.23	3.3
Delaware	7.91	6.13	12.06	*	*	7.77	2.0
District of Columbia	8.15	2.65	12.09	*	*	5.56	4.6
Florida	6.16	4.90	10.82	*	4.61	4.46	2.2
Georgia	7.60	5.17	11.96	*	3.57	5.75	2.3
Hawaii	5.38	3.93	*	*	6.05	4.21	*
Idaho	5.28	5.18	*	*	*	5.96	*
Illinois	6.32	4.89	12.29	*	3.92	5.53	2.5
Indiana	7.26	6.42	12.94	*	4.91	7.13	2.0
Iowa	4.98	4.54	9.65	*	6.12	5.49	2.1
Kansas	6.05	5.61	11.09	*	4.58	5.45	2.0
Kentucky	6.88	6.41	11.72	*	*	5.69	1.8
Louisiana	7.68	5.41	11.53	*	5.40	4.86	2.1
Maine	6.31	6.22	*	*	*	*	*
Maryland	6.54	4.10	10.71	*	4.88	5.35	2.6
Massachusetts	4.20	3.27	7.62	*	2.71	5.55	2.3
Michigan	6.47	4.95	12.10	*	4.53	7.10	2.4
Minnesota	5.10	4.08	9.46	10.64	6.06	5.07	2.3
Mississippi	8.77	6.73	11.59	*	*	6.22	1.7
Missouri	6.40	5.45	11.73	*	4.05	5.85	2.2
Montana	5.79	4.91	*	11.11	*	*	*
Nebraska	5.61	5.15	11.04	*	*	5.52	2.1
Nevada	5.49	4.69	9.41	*	5.19	4.97	2.0
New Hampshire	4.05	3.78	*	*	*	*	*
New Jersey	4.37	3.06	9.47	*	2.72	4.48	3.1
New Mexico	5.47	4.92	*	5.86	*	5.24	*
New York	4.58	3.71	8.75	*	3.07	4.36	2.4
North Carolina	7.24	5.54	12.65	7.66	4.67	5.46	2.3
North Dakota	6.23	5.10	*	13.13	*	*	*
Ohio	7.16	5.78	13.73	*	4.39	6.49	2.4
Oklahoma	7.67	6.94	12.92	8.66	6.20	5.91	1.9
Oregon	4.98	4.88	8.61	*	4.54	4.82	1.8
Pennsylvania	6.06	4.74	11.00	*	3.81	6.41	2.3
Rhode Island	5.30	3.70	11.04	*	*	5.32	3.0
South Carolina	6.79	4.95	10.88	*	*	4.82	2.2
South Dakota	5.37	4.74	*	11.57	*	*	*
Tennessee	6.28	5.93	11.57	*	6.92	4.98	2.0
Texas	5.76	4.90	10.36	5.93	4.14	5.33	2.1
Utah	5.12	4.74	*	*	5.39	5.93	*
Vermont	4.22	4.10	*	*	*	*	*
Virginia	5.80	4.76	10.23	*	3.68	4.30	2.1
Washington	4.56	4.19	7.90	8.15	3.68	4.59	1.9
West Virginia	7.10	6.92	11.10	*	*	*	1.6
Wisconsin	5.94	4.89	13.91	8.46	5.18	5.03	2.8
Wyoming	5.43	5.14	*	*	*	*	*

* Figure does not meet standards of reliability or precision; based on fewer than 20 deaths in the numerator

¹ Includes Aleuts and Eskimos.

NOTES: Race and Hispanic origin are reported separately on birth certificates.

Table 3. Live births, infant, neonatal, and postneonatal deaths and mortality rates by race and Hispanic origin of mother and birthweight: United States, 2016 linked file

Race and Birthweight	Number in 2016				Mortality rate per 1,000 live births in 2016		
	Live births	Infant deaths	Neonatal deaths	Postneonatal deaths	Infant	Neonatal	Postneonatal
All races	3,945,875	23,157	15,303	7,854	5.87	3.88	1.99
Less than 2,500 grams	322,726	15,456	12,534	2,922	47.89	38.84	9.05
Less than 1,500 grams	55,963	11,877	10,457	1,420	212.23	186.86	25.37
Less than 500 grams	6,434	5,473	5,318	155	850.64	826.55	24.09
500-749 grams	9,650	3,695	3,116	579	382.90	322.90	60.00
750-999 grams	10,792	1,330	1,031	299	123.24	95.53	27.71
1,000-1,249 grams	13,044	714	530	183	54.74	40.63	14.03
1,250-1,499 grams	16,043	666	462	204	41.51	28.80	12.72
1,500-1,999 grams	62,880	1,614	1,070	544	25.67	17.02	8.65
2,000-2,499 grams	203,883	1,965	1,007	959	9.64	4.94	4.70
2,500 grams or more	3,619,575	7,549	2,630	4,919	2.09	0.73	1.36
2,500-2,999 grams	730,726	2,720	1,093	1,627	3.72	1.50	2.23
3,000-3,499 grams	1,527,728	2,956	913	2,043	1.93	0.60	1.34
3,500-3,999 grams	1,048,489	1,418	441	977	1.35	0.42	0.93
4,000-4,499 grams	269,872	379	133	246	1.40	0.49	0.91
4,500-4,999 grams	38,264	58	37	21	1.52	0.97	0.55
5,000 grams or more	4,496	18	13	5	*	*	*
Not stated	3,574	152	138	13	...	...	...
Non-Hispanic White	2,056,332	9,974	6,355	3,619	4.85	3.09	1.76
Less than 2,500 grams	143,566	6,097	4,896	1,201	42.47	34.10	8.37
Less than 1,500 grams	22,272	4,431	3,905	526	198.95	175.33	23.62
Less than 500 grams	2,119	1,835	1,790	45	865.97	844.74	21.24
500-749 grams	3,364	1,400	1,192	208	416.17	354.34	61.83
750-999 grams	4,255	567	449	117	133.25	105.52	27.50
1,000-1,249 grams	5,527	322	248	73	58.26	44.87	13.21
1,250-1,499 grams	7,007	307	225	82	43.81	32.11	11.70
1,500-1,999 grams	28,589	775	527	248	27.11	18.43	8.67
2,000-2,499 grams	92,705	891	464	427	9.61	5.01	4.61
2,500 grams or more	1,910,901	3,818	1,405	2,413	2.00	0.74	1.26
2,500-2,999 grams	326,286	1,314	582	732	4.03	1.78	2.24
3,000-3,499 grams	772,176	1,474	476	998	1.91	0.62	1.29
3,500-3,999 grams	612,652	764	243	521	1.25	0.40	0.85
4,000-4,499 grams	172,440	229	80	148	1.33	0.46	0.86
4,500-4,999 grams	24,781	28	16	12	1.13	*	*
5,000 grams or more	2,566	9	8	1	*	*	*
Not stated	1,865	59	54	5	...	...	...
Non-Hispanic Black	558,622	6,354	4,213	2,140	11.37	7.54	3.83
Less than 2,500 grams	76,624	4,673	3,712	960	60.99	48.44	12.53
Less than 1,500 grams	16,783	3,834	3,300	533	228.45	196.63	31.76
Less than 500 grams	2,372	1,985	1,912	73	836.85	806.07	30.78
500-749 grams	3,315	1,147	931	215	346.00	280.84	64.86
750-999 grams	3,389	370	259	110	109.18	76.42	32.46
1,000-1,249 grams	3,522	176	113	62	49.97	32.08	17.60
1,250-1,499 grams	4,185	157	84	72	37.51	20.07	17.20
1,500-1,999 grams	14,889	362	205	157	24.31	13.77	10.54
2,000-2,499 grams	44,952	477	207	270	10.61	4.60	6.01
2,500 grams or more	481,398	1,633	457	1,176	3.39	0.95	2.44
2,500-2,999 grams	141,563	690	216	474	4.87	1.53	3.35
3,000-3,499 grams	213,264	632	157	475	2.96	0.74	2.23
3,500-3,999 grams	102,703	240	60	179	2.34	0.58	1.74
4,000-4,499 grams	20,571	57	15	42	2.77	*	2.04
4,500-4,999 grams	2,880	14	9	5	*	*	*
5,000 grams or more	417	-	-	-	...	...	...
Not stated	600	48	44	4	...	...	...

See footnotes at end of table.

Table 3. Live births, infant, neonatal, and postneonatal deaths and mortality rates by race and Hispanic origin of mother and birthweight: United States, 2016 linked file--Con

Race and Birthweight	Number in 2016				Mortality rate per 1,000 live births in 2016		
	Live births	Infant deaths	Neonatal deaths	Postneonatal deaths	Infant	Neonatal	Postneonatal
Non-Hispanic American Indian/ Alaska Native	31,452	297	160	136	9.44	5.09	4.32
Less than 2,500 grams	2,451	147	120	27	59.98	48.96	11.02
Less than 1,500 grams	445	114	103	11	256.18	231.46	*
Less than 500 grams	45	41	40	1	911.11	888.89	*
500-749 grams	90	38	35	3	422.22	388.89	*
750-999 grams	78	17	15	2	*	*	*
1,000-1,249 grams	101	8	6	2	*	*	*
1,250-1,499 grams	131	10	7	3	*	*	*
1,500-1,999 grams	483	17	12	5	*	*	*
2,000-2,499 grams	1,523	16	5	11	*	*	*
2,500 grams or more	28,987	149	40	109	5.14	1.38	3.76
2,500-2,999 grams	5,155	41	14	27	7.95	*	5.24
3,000-3,499 grams	11,507	63	15	48	5.47	*	4.17
3,500-3,999 grams	9,058	33	7	26	3.64	*	2.87
4,000-4,499 grams	2,706	8	1	7	*	*	*
4,500-4,999 grams	473	3	2	1	*	*	*
5,000 grams or more	88	1	1	-	*	...	*
Not stated	14	-	-	-	...	...	...
Non-Hispanic Native Hawaiian or other Pacific Islander	9,342	69	42	27	7.39	4.50	2.89
Less than 2,500 grams	718	38	27	11	52.92	37.60	*
Less than 1,500 grams	139	29	24	5	208.63	172.66	*
Less than 500 grams	12	11	11	-	*	*	...
500-749 grams	22	10	9	1	*	*	*
750-999 grams	33	5	2	3	*	*	*
1,000-1,249 grams	38	2	1	1	*	*	*
1,250-1,499 grams	34	1	1	-	*	*	...
1,500-1,999 grams	149	5	2	3	*	*	*
2,000-2,499 grams	430	4	1	3	*	*	*
2,500 grams or more	8,619	30	14	16	3.48	*	*
2,500-2,999 grams	1,728	10	3	7	*	*	*
3,000-3,499 grams	3,468	8	4	4	*	*	*
3,500-3,999 grams	2,462	7	5	2	*	*	*
4,000-4,499 grams	776	4	1	3	*	*	*
4,500-4,999 grams	147	1	1	-	*	*	...
5,000 grams or more	38	-	-	-	...	...	...
Not stated	5	1	1	-	...	...	...
Non-Hispanic Asian	254,471	925	678	247	3.63	2.66	0.97
Less than 2,500 grams	21,484	674	578	96	31.37	26.90	4.47
Less than 1,500 grams	2,823	542	486	56	191.99	172.16	19.84
Less than 500 grams	279	244	239	5	874.55	856.63	*
500-749 grams	449	201	168	33	447.66	374.16	73.50
750-999 grams	485	46	37	9	94.85	76.29	*
1,000-1,249 grams	691	19	16	3	*	*	*
1,250-1,499 grams	919	32	26	6	34.82	28.29	*
1,500-1,999 grams	3,822	58	42	16	15.18	10.99	*
2,000-2,499 grams	14,839	73	49	24	4.92	3.30	1.62
2,500 grams or more	232,799	244	95	149	1.05	0.41	0.64
2,500-2,999 grams	61,329	84	35	49	1.37	0.57	0.80
3,000-3,499 grams	107,858	99	43	56	0.92	0.40	0.52
3,500-3,999 grams	52,739	50	10	40	0.95	*	0.76
4,000-4,499 grams	9,645	7	3	4	*	*	*
4,500-4,999 grams	1,093	2	2	-	*	*	...
5,000 grams or more	135	1	1	-	*	*	...
Not stated	188	7	6	1	...	...	...
Hispanic	918,447	4,555	3,170	1,384	4.96	3.45	1.51
Less than 2,500 grams	67,346	3,166	2,625	541	47.01	38.98	8.03
Less than 1,500 grams	11,510	2,397	2,412	255	208.25	209.56	22.15
Less than 500 grams	1,289	1,072	1,044	28	831.65	809.93	21.72
500-749 grams	2,051	748	644	104	364.70	313.99	50.71
750-999 grams	2,204	271	222	49	122.96	100.73	22.23
1,000-1,249 grams	2,721	165	126	39	60.64	46.31	14.33
1,250-1,499 grams	3,245	140	106	34	43.14	32.67	10.48
1,500-1,999 grams	12,910	339	242	97	26.26	18.75	7.51
2,000-2,499 grams	42,926	429	241	189	9.99	5.61	4.40
2,500 grams or more	850,690	1,371	527	844	1.61	0.62	0.99
2,500-2,999 grams	172,174	466	204	262	2.71	1.18	1.52
3,000-3,499 grams	374,439	564	191	373	1.51	0.51	1.00
3,500-3,999 grams	239,211	269	98	172	1.12	0.41	0.72
4,000-4,499 grams	55,983	59	27	32	1.05	0.48	0.57
4,500-4,999 grams	7,770	7	5	2	*	*	*
5,000 grams or more	1,113	5	2	3	*	*	*
Not stated	411	18	18	-	...	...	...

* Figure does not meet standards of reliability or precision; based on fewer than 20 deaths in the numerator.
 ... Category not applicable.
 - Quantity zero

NOTES: Infant deaths are weighted so numbers may not exactly add to totals due to rounding. Neonatal is less than 28 days and postneonatal is 28 days to under 1 year. Race and Hispanic origin are reported separately on birth certificates.